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Three Essays in Political Economy and Public Policy

By

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Committee in charge:

Professor Steven Tadelis, Chair
Professor Ernesto Dal Bo
Professor Shachar Kariv

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Abstract

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Chapter 1: In the last two decades, public agencies have started to include performance pay into their compensation structure. Using a survey data of all law enforcement agencies in the Unites States, this chapter investigates: (1) if the adoption of performance pay by agencies affected their ability to fight crime and (2) whether agencies responded to performance pay adoption by shifting their policing strategies to game the change? We find that despite increases in the pay gap, performance pay adoption resulted in no change in the police's ability to fight crime. We find little evidence that adopting agencies attempted to game the incentive structure by shifting efforts away from less profitable tasks.

Chapter 2: There has been much debate over whether interest groups act as ideologues or investor when they contribute to candidates. In a seminal work, Snyder (1990) finds that economic interest groups behave as investors and there is a one to one correlation between candidates' share of contribution from economic interest groups and their probability of winning. This chapter expands on Snyder's work by proposing a new strategy to empirically identify investor interest groups, that is, by examining whether an interest group has ever given to competing parties in a race, we call this group "diversifiers". We find that there is indeed a significant correlation between diversifier contribution share and election outcome. Furthermore, the correlation between diversifiers contribution share to date and election outcome remains significant as early as approximately 48 weeks before election day.

Chapter 3: Participation of interest groups in public policy making is ubiquitous and unavoidable. In this final chapter, we try to understand the mechanisms through which interest groups attempt to influence the implementation of public policies from an Institutional Economics perspective. We recognize that while it is legislatures that enact and supervise statures, it is often bureaucracies that implement policies. We survey a collection of papers that analyze how the vast power invested in bureaucracies influence

the strategic choice of interest group in means to exert influence – buying, lobbying and suing. We further generalize our analysis to understand how differences in the institutional environment impact the role of interest groups in public policy making.

Dedication

This dissertation is dedicated to My Parents,
Yun Hua Yang and Zhonglie Liao,
My Friends,
Mark Rampton, Corine Ho, Dina Lee, and Brian Chen;
and In Remembrance of My Grandmother,
Xin Xiang Lee

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Table of Contents

1 Chapter 1: Performance Pay and Productivity - The Effect of Incentive Reforms on Law Enforcement Agencies

1.1 Introduction

In recent years, performance pay has been used increasingly as a scheme to enhance productivity in the public sector. Public agencies from the state of Georgia to the city of Palo Alto have incorporate performance pay into their compensation packages with the goal of attracting higher-quality employees and enticing employees to work harder, thereby providing higher quality service to the population that they serve.

An excerpt from *Measuring Performance: The State Management Report Card for 2008* (Barrett and Greene, 2008) highlights a driving force behind the progressing adoption of pay for performance in the public sector:

> *"(W)hat are states doing to hang on to new, young hires, many of whom march out the door and into the private sector? Some solutions are emerging. Georgia used to line up its compensation and benefit package with other states. Now, it's focusing on the private sector instead and shifting its compensation and benefit package accordingly. 'We are working against the mentality of, you work for us for 30 years and then you get this great pension and retiree medical,' says Steve Stevenson, commissioner of the merit system of the personnel administration. 'That's not really what the emerging workforce is looking for. They're looking for bigger base pay and pay for performance.'"*

The benefits of performance pay for the public sector, however, have been hotly debated among public policy advocates, academic researchers, and practitioners. On the one hand, classical economic theory rests on the insight that individuals respond to incentives (Mas-Colell, Whinston, and Green, 1995). Therefore, moving from a compensation scheme that provides no incentive for performance to one that rewards performance, one would expect performance pay to increase the productivity of public agencies through increasing the productivity of current public agency employees and attracting more productive individuals who can better benefit from performance pay.

On the other hand, many argue that public agencies are very different from private agencies. Therefore a compensation scheme that works well in the private sector may not have the same effect in the public sector. More specifically, a key difference between private firms and public agencies is that while private firms can easily measure the value of their output via market prices, public agencies do not enjoy such a luxury (Dixit, 1997). The lack of markets makes the output of public agencies much more difficult to capture.

As a result, performance pay may be much less effective at incentivizing employees in the public sector, and may even lead to gaming of the system. [1]

The efficacy of performance pay in the public sector has been studied in many experimental programs. Researchers have found that in general, performance pay has increased the output in the measured dimension, were it the short-term job placement of job training candidates, or the test scores of students whose teachers are compensated for these results. This study attempts to contribute to this literature by expanding our scope beyond intervention programs to permanent adoptions of performance pay among a large group of similar agencies across the nation – the law enforcement agencies.

Using survey data on the management practices of all law enforcement agencies in the U.S., this paper studies the effect on crime when agencies adopt performance pay. I find that while there exist large variations in the fashion in which agencies adopt performance pay, the incentive scheme in general has very little effect on the output that police agencies produce.

In conclusion, performance pay does not seem to be the panacea for public agencies that wish to increase their productivity. While performance pay does appear to alter the way police officers are compensated and to some extent, the way that agencies allocate their resources, the changes do not culminate in a significant change in the efficacy of law enforcement effort at fighting crime.

This chapter is organized in the following fashion. Section 1.2 describes the background of incentive reforms in the public sector. Section 1.3 reviews prior work that evaluates incentive reforms in public agencies. Section 1.4 presents competing theories on the effect of performance pay on productivity in the public sector. Section 1.5 and 1.6 describe the data and results of empirical analysis. Section 1.7 discusses shortcomings of this study and proposes venues for future research. Section 1.8 concludes.

1.2 Background of Incentive Contracts in the Public Sector

The United States Civil Service system as we know it today was established by the Pendleton Act on January 16, 1883 (*Pendleton Act*, 1883). The Act was passed to put a stop to the "Spoil System" that was prevalent in the Jackson administration where those in power often rewarded their supporters via political appointee position (Hoogenboom, 1959). In its place, a "Merit System", characterized by a formalized set of procedural rules that limit managerial discretionary power was implemented. Key changes brought by the Merit System include standardized entrance exams for all civil service positions and a rigid seniority system that determines pays, raises and demotions of employees. The Merit System was quickly adopted by all states in the U.S. (Walters, 2002).

[1] There is considerable doubt on the benefits of pay for performance in the private sector as well, pioneered by Kerr (1975). For a comprehensive review of these studies, see Gibbons (1998).

The pride of the Merit System – its rules that restrict patronage – unfortunately also serves to restrict other forms of managerial discretion. In particular, the Merit System takes away managers' abilities to reward or penalize employees based on performance. Public sector managers and public policy advocates have since then blamed the resultant lack of incentives in the public sector for the seemingly lower efficiency of public agencies compared to their private counterparts.

A few states, frustrated with the inflexibility of personnel management under the Merit System, took drastic steps to reform the Civil Service System. Among them, Texas, Georgia and Florida made the most comprehensive changes to empower managers in personnel management. Texas is the first to attempt the elimination of the Merit System altogether. Since 1985, Texas adopted a high-powered incentive system where with the exception of law enforcement agencies, all other civil service positions are staffed by "at-will"[2] employees whose promotion depends on the assessment of their management and who may be terminated if their performance is deemed sub-par. Georgia is perhaps the state that underwent the most dramatic changes. Starting July 1, 1997, all new employees and position in Georgia's state civil service system are considered "at-will\" positions. Furthermore, management is also given the power to create new positions and hire employees as they see fit. Thus the reform effectively gives Georgia's state-level agency managers power similar to managers in the private sector. Florida adopted a pay for performance system in 2001. Florida's public agency managers are given the power to hire and fire employees as they see fit, given that they abide by a wide pay band to compensate employees. (Walters, 2002)

In recent years, other states such as Virginia and Colorado have also experimented with linking pay to performance, while retaining a centralize civil service system. In Virginia, agencies are allowed to develop their own compensation system to reward top performers and penalize low performers, although 98% of the employees are at the same time protected by the Merit System. Specifically, top performers are offered additional monetary bonuses and/or vacation days, and low performers are demoted and given pay cuts of 5% or more (the PEW Center on the States, 2005; Virginia Department of Human Resources Management, 2001). Since 2002, Colorado has implemented a four-tier performance rating system for state-funded agencies from the Department of Agriculture to the University of Colorado. Implementation of performance pay in Colorado varies greatly across agencies, with the most prevalent forms being awarding an additional percentage of base salary to individuals with high ratings and making promotion contingent on good performance ratings (Colorado Department of Personnel and Administration, 2008). However, since the Merit Systems are not abolishes in these two states, the job safety that it provides limits the extent to which lower performance can be punished. Additionally, while the incentives in these two states are significant in theory, their use is limited by the

[2] Employment at will means that in the absence of a written contract of employment for a defined duration, an employer can terminate an employee for good cause, bad cause or no cause at all, so long as it is not an illegal cause. (Georgia Secretary of State, 2007)

amount of discretionary funds at agencies' disposal to reward top performers[3]. Therefore, while performance pay may create some incentives for public employees in Virginia and Colorado, the effects are much smaller than they are in Georgia, Texas, and Florida.

Concurrent with statewide reforms, many local governments adopted performance pay as well. As Figure 1 shows, the number of police agencies that pay for performance rose from 516 in 1993 to 2794 in 2003 (Law Enforcement Management and Administrative Survey, 1993-2003). Performance pay is often adopted across multiple agencies in a municipality. According to IEDA, a private organization who specializes in public organization's labor contracts, among 31 California municipalities that allow 3% or more of employee pay to be based on performance, 23 municipalities implemented performance pay across multiple agencies simultaneously (IEDA, 2007). Among the adopting agencies, a wide variety of performance pay schedules are used. As a summary of California municipal labor contracts reveals, in California alone, performance pay ranges from 1%-40% of employees' base salaries between 2000-2007(IEDA, 2007). Finally, it is worth noting that the quality of performance pay contracts varies greatly across agencies. One striking example is the difference between the contracts used by the City of Concord, CA and the City of Vacaville, CA. Both are cities in the San Francisco Bay Area. The former stipulates that each manager must specify a detailed yearly goal at the beginning of the year. At the end of the year, the same managers are assessed against their own annual goals. Based on their performance evaluations, managers can be awarded up to 12% of their base pay or lose 5% of their base pay(City of Concord, 1999). In comparison, the City of Vacaville publicizes no clear format to measure performance, and awards only up to 1% of base pay in the form of performance pay. The only clear condition for the dispensing of performance pay is that that recipients must have attended an annual management classes (City of Vacaville, 2001, IEDA, 2007).

1.3 Literature Review

Empirical studies of pay reforms in private firms generally find that firms experience increases in productivity when they shift from flat to high-powered incentive schemes. Lazear (1996) studies the effect of a glass production and installation firm's switch from hourly wages to piece rates on productivity. He finds that both productivity and worker compensation increased after the change[4]. Lazear also shows that the majority of increases in productivity are attributed to employee self-sorting, rather than increased productivity of current employees. Similar results in other industries are found in Paarsch and Shearer (1996), Banker, Lee and Potter (1996), and Fernie and Metcalf (1996), among others.[5]

[3] In Colorado, no agency commits to a specified range of performance pay as a percentage of base pay. Agencies commonly state that the maximum and minimum amount are to be determined by key officials (Colorado Department of Personnel and Administration, 2008)

[4] Lazear (1996) also finds that in the beginning, when the outcome measure is too narrowly defined, employees displayed gaming behavior. Such gaming behavior disappeared when the outcome measure is revised.

[5] For a comprehensive review of studies on incentives in firms, see Prendergast (1999).

Gibbons (1998) summarizes studies that find that when used improperly, performance pay may lead to detrimental effects in the private sector as well. However, he concedes that when used in conjunction with good human resource management structure, performance pay does have profit-enhancing benefits[6].

Pay reforms in public organizations are scarcer and empirical studies offer mixed results. Heckman, Heinrich, and Smith (1997), Marschke (2002) and Courty and Marschke (1992) study the effects of the Job Training Partnership Act (JTPA) on programs that provide job training to the disadvantaged. They find that by paying job-training centers according to graduate placement, the JTPA motivates administrators to pursue short-term goals that may or may not be correlated with long-term goals. More specifically, administrators in the affected job training centers appear to alter their actions to maximize the number of trainees who can successfully be placed into jobs through manipulating reporting time and changing methods of training. However, there is no direct empirical evidence that gaming the incentives structure lowers quality.

Evaluations of Pay for Performance programs in schools reveal contradicting results as well. For example, Lavy (2002, 2004) finds that Pay for Performance programs in Israeli schools led to improvements in many dimensions of student performance. On the contrary, Glewwe, Ilias and Kremer (2003) find that while paying teacher for student performance in rural Kenya increases test scores of students, the improvements are achieved through more time allocated to test preparation, instead of more overall teaching effort on the part of teachers. Furthermore, the improvements in test scores quickly wear off after the program ends. The mixed results have been attributed to the complex nature of teacher's jobs (Murnane and Cohen, 1986) and the political background of schools in which these reforms are implemented in (Ballou, 2001), among others.

This paper extends the focus on incentive pay in public organizations beyond sporadic intervention programs. Through studying the effect of permanent pay reforms on police agencies across the nation, I hope to contribute to our knowledge of incentives in the public sector by investigating whether incentive pay reforms enhanced or reduced the productivity of public employees in a large number of comparable agencies across the nation – the law enforcement agencies, and how these changes are brought about.

1.4 Theories

Classical economic theory rests on the assumption that individuals respond to incentives (Mas-Colell, Whinston, and Green, 1995). Naturally, the widespread lack of incentives in the public sector under the Merit System is held responsible for the "low" productivity of civil servants and public organizations. As a remedy, many have suggested that the Merit System be replaced with the Performance Pay System. Advocates of performance pay

[6] Studies of executive pay have also cast doubts on the effectiveness of performance-based pay. However, this ineffectiveness is often attributed to the CEO's ability influence the sensitivity of pay to performance and the pay structure. See Bebchuk and Fried (2004).

believe that by giving managers discretionary power to reward employees for high performance, performance pay will elicit more effort from employees, and increase the productivity of the public agencies. In the Governing Magazine's 1998 "Measuring Performance, Making Progress" conference, the benefits of endowing managers with more discretionary power to reward employees is highlighted in an illustration of then New York City Police Chief Bratton's new crime-fighting program,

> *"In order to achieve those goals (fighting crime), Bratton decentralized the department and held district chiefs accountable for measurable results…New York City's police department…boasts a rapidly declining crime rate that is 60% lower today in seven major crime areas than in 1990. Crime rates have fallen nationally, but New York's decline in such categories as homicide and auto theft has bee much swifter and stronger" (Lemov, 1998)*

Classical economic theory thus predicts that absent agency problems, a shift from non-performance-based pay to performance-based pay should lead to an increase in employee performance.

In the meantime, however, the same problems that plagued the overly discretionary Civil Service regime in the Jackson administration may still exist today. The roots of these problems can be summarized by Dixit's (1997) discussion of the unique characteristics of public agencies. Dixit argues that public agencies are intrinsically different from private firms. One of the most distinguished differences is that there is no market for goods and services that public agencies provide. While private firms can use the market to accurately capture the value of employee output (though stock prices, sales volumes, etc.), public agencies do not enjoy such a luxury. As a result, if managers are given the discretionary power to reward employees based on performance, the evaluations that determine pay may be both poorly captured and prone to subjective biases. The correlation between the evaluation and the real underlying performance will determine the effectiveness of performance pay at motivating workers. Baker (1992, 2002) shows through a rigorous model that when employee pay is sufficiently insensitive to employee effort, high-powered incentive contracts are inferior to flat incentive contracts.

Beyond muting the power of incentives, imperfect measurement of employee productivity may even result in distortion of effort input. In public and private organizations alike, employees are commonly given a bundle of tasks to perform. For example, a police officer's job is vaguely, to fight crime, which in actuality encompasses a collection of tasks including patrolling neighborhoods, investigating crimes, collecting evidences, arresting criminals, educating the community about crime prevention practices, etc. However, without the ability to use the market to determine the value of each officer's level of effort and contribution, agency chiefs must resort to alternative means to imperfectly measure a police officer's performance in the various tasks. Unavoidably, some tasks, such as time spent at patrolling, are easier to monitor than others, such as the effectiveness of an officer at collecting evidence that may ultimately lead to convictions. The differences in the

measurability of various tasks that an officer is responsible for create opportunities for gaming: when pay is tied to observable performance in each task, profit-maximizing individuals can increase their pay by investing more effort in the easy to measure tasks and less effort in the difficult to measure ones (Holmstrom and Milgrom, 1991, 1994). Pervasive gaming may result in worse agency performance than if no incentives used applied at all.

1.5 Data

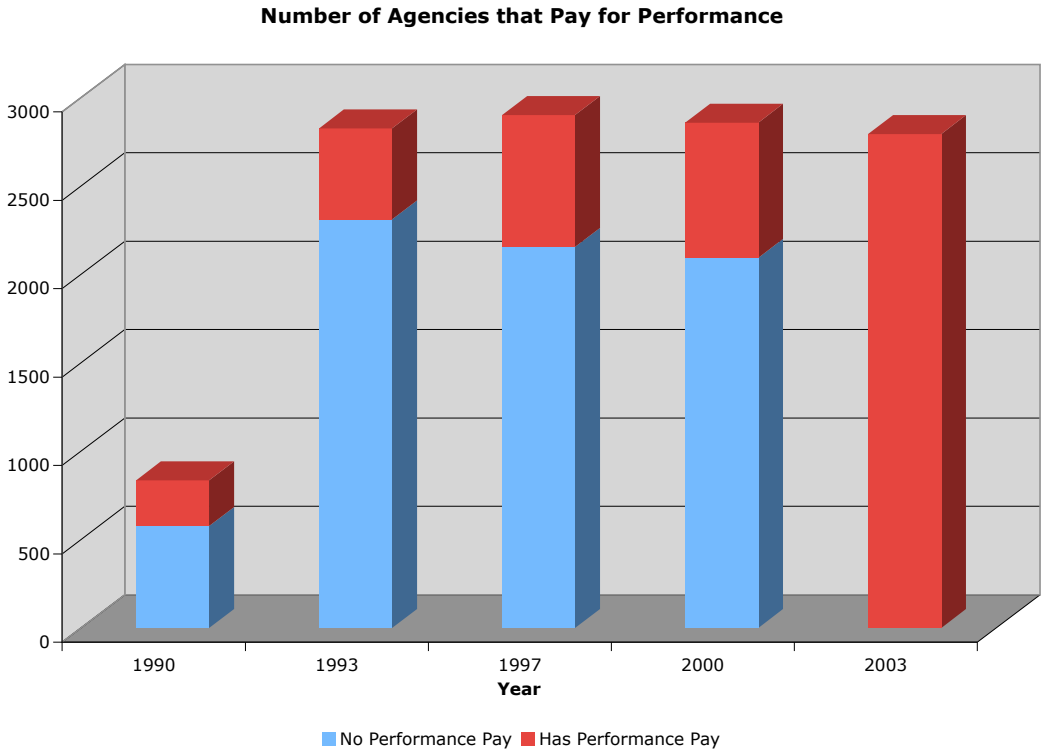
I use the Law Enforcement Management and Administrative Statistics (LEMAS) to capture pay reforms among police agencies. LEMAS surveys police agencies across the nation every 3 or 4 years between 1990 and 2003. Among others, LEMAS asks each law enforcement agency whether or not it pays for performance in each survey year. An agency is considered to have experienced a pay reform if it answers "yes" to pay for performance following a "no" in the previous survey year. As Figure 1 shows, The number of agencies that claim to pay for performance rose from 18% in 1993[7] to 100% in 2003.

Police performance is measure by the crime levels and arrest levels that each law enforcement agency reports to the Uniform Crime Reporting Series. Ideally, we would like to directly gauge police productivity by examining measures that reflect the immediate results of police effort at fighting crimes such as response time to calls, time spent at patrolling, success at apprehending criminals and comprehensiveness of police reports that lead to conviction, etc. However, such measures are not available in a usable format. Instead, I proxy for police productivity by observing the overall outcomes of police efforts such as reported crime levels and crime clearance levels. Reported crime level is the number of actual offenses reported to a law enforcement agency; crime clearance level is the number of crimes solved by one or more arrest in each agency (Federal Bureau of Investigation, 2004).

Agency characteristics such as the number of employees in each agency and the population protected by an agency are provided by the Law Enforcement Officers Killed or Assaulted (LEOKA) dataset. For robustness check, I also include agency characteristics such as the difference between the maximum and minimum pay for chiefs and sergeants (LEMAS).

[7] Even though data exists for 1990, very few agencies replied to the survey, making the summary statistics unreliable for direct comparison. Thus 1993 is used as a benchmark.

Figure 1. Prevalence of Performance Pay Adoption 1990-2003



Finally, I control for demographic characteristics through data from the Current Population Survey (CPS)[8]. For this analysis, I use measures of Metropolitan Statistical Area's median income, income gap, average education achievement, median age, median number of works looking for working while having no work, percentage of black population, sex ratio, and unemployment rates.

Since the LEMAS survey is only conducted in 1990, 1993, 1999/2000[9] and 2003, I extrapolate to obtain yearly observations between 1990-2004 to be matched with the other yearly datasets. More specifically, if an agency reports a "yes" to performance pay in one year following a "no in the previous survey year, I consider the agency to have adopted performance pay in the first year that it answered a "yes". I apply the same rule to agencies that answered a "no" in a survey year following a "yes" in the previous survey year. Another problem with the LEMAS is that many agencies did not respond in every survey year. Since performance pay is the exception rather than the norm, if an agency

[8] I include similar demographic controls as those found in Levitt (1995) and Imrohoroglu et al. (2004).
[9] The 1999 and 2000 data cover complementary variables. Since LEMAS is normally conducted every 3 to 4 years, I consider 1999 and 2000 as one single survey year for the purpose of this study.

reports a "no" in one year, I consider it as having had no performance pay for all preceding and following years until I reach a year where the agency answers a "yes". For years between two "no" or two "yes", I interpret the between years as to have the same answer. I thereby extend the LEMAS into a unbalanced panel dataset with yearly observations between 1990 and 2004.

I match the agency-year observations in the expanded LEMAS to agency-year observations in UCR and LEOKA, and again match the merged dataset by metropolitan area-year to the CPS. One common problem with the UCR is that many agencies appear to experience zero crime rates in certain years. This is likely a reporting error since the chance that agencies would experience such precipitous drops across the board is almost zero. To eliminate the bias that can arise from such reporting errors, I drop all agencies whose maximum yearly crime level exceed 50, but report a 0 in one or more years. In the end, after merging LEMAS, UCR, LEOKA and the CPS, extending the dataset to include all years in between the survey years of LEMAS, and dropping agencies that may have experienced reporting problems, I have an unbalanced panel of 2115 agencies spanning 1990-2004.

1.6 Empirical Analysis

1.6.1 Summaries Statistics

Table 1 presents summary statistics of key variables by whether agencies have ever used performance pay between 1990-2004. One notices that agencies that have never used performance pay look significantly different from agencies that have used performance pay in the 15 years span. The former has lower income, larger income gap, smaller population, lower pay for police officers, and less crime than the latter. It would thus be necessary to control for such between agency differences when comparing the effect of performance pay across the entire sample.

Among agencies that adopted performance pay, we are interested in investigating if the adoption resulted in any change in productivity. In Table 2, I focus on agencies who adopted performance pay, and compare summary statistics for these agencies in a three-year-period immediately before adoption (2 to 4 years before), and a three-year-period during and immediately after adoption (1 year before to 1 year after). As expected, agencies display no significant differences in demographic characteristics before and after adoption, but they experience significant increases in wages and decreases in crime levels after adoption.

Finally, to further examine how agencies respond to performance pay in their policing strategies, I look at the reported primary tasks of each agency before and after incentive reforms. These tasks included homicide investigation, other violent crime investigation, arson investigation, other property crime investigation, accident investigation, drugs & vices investigation, patrol, warrant, dispatch, tactical operations and parking enforcements,

and comprise the universe of all reported primary tasks. As Table 3 shows, comparing responses immediately before and after performance pay adoption, the percentage of agencies that consider each task their primary task either declines or remains stagnant for all tasks except for dispatch, which increases from 84% to 93%. The change implies that agencies may have responded to performance pay adoption by changing from targeting specific crimes to responding to civilian calls. The effectiveness of their strategies is evaluated in the following section.

Table 1 Summary Statistics

	Agency Never Used Perf. Pay	Agency Used Perf. Pay at Some Point	P Statistic (H_0: Δ=0)
Provides Pay for Performance	0 (0)	0.57 (0.0060)	0.00
Income (In 1982-84 Dollar)	11063.14 (36.77)	11066.79 (25.73)	0.94
Age	41.10 (0.051)	40.60 (0.038)	0.00
Education Level	7.39 (0.0086)	7.49 (0.0061)	0.00
Numbers of Weeks Looking for Work while Unemployed in a Year	24.22 (0.34)	24.97 (0.23)	0.09
Percent of Population Black	0.11 (0.0016)	0.12 (0.0012)	0.00
Sex Ratio	0.52 (0.00042)	0.52 (0.00030)	0.00
Unemployment Rate	0.055 (0.00048)	0.056 (0.00035)	0.01
Income Gap (p75income/p25 income)	21.69 (7.97)	8.30 (1.87)	0.10
Chief's Minimum Salary (In 1982-84 Dollar)	29726.86 (191.86)	39659.15 (158.93)	0.00
Chief's Maximum Salary (In 1982-84 Dollar)	31743.41 (207.85)	46509.43 (234.44)	0.00
Sergeant's Minimum Salary (In 1982-84 Dollar)	22142.13 (130.71)	24149.16 (81.84)	0.00
Sergeant's Maximum Salary (In 1982-84 Dollar)	27412.35 (245.22)	28686.82 (94.28)	0.00
Population	17579.48 (506.12)	87926.13 (1781.50)	0.00
Total Number of Police Officers	34.40 (1.24)	201.27 (5.41)	0.00
Reported Crimes	748.90 (40.08)	6232.17 (165.49)	0.00
Cleared Crimes	218.85 (12.24)	1587.90 (38.62)	0.00
Number of Agency-Year Observations	3261	7027	-

Table 2 Comparison of Adopting Agencies Pre (2-4 Years Prior to) and During (1 Year Prior to – 1 Year Post) Adoption

	Before	After	P Statistic (H_0: Δ=0)
Provides Pay for Performance	0.041 (0.0059)	0.64 (0.014)	0.00
Income (In 1982-84 Dollar)	11453.09 (68.48)	11252.23 (60.54)	0.03
Age	40.77 (0.092)	41.23 (0.092)	0.00
Education Level	7.51 (0.015)	7.55 (0.015)	0.03
Numbers of Weeks Looking for Work while Unemployed in a Year	22.33 (0.58)	28.48 (0.58)	0.00
Percent of Population Black	0.12 (0.0023)	0.12 (0.0027)	0.93
Sex Ratio	0.52 (0.00074)	0.52 (0.00067)	0.83
Unemployment Rate	0.051 (0.00087)	0.058 (0.00083)	0.00
Income Gap (p75income/p25 income)	6.05 (0.19)	5.99 (0.093)	0.77
Chief's Minimum Salary (In 1982-84 Dollar)	43222.52 (376.00)	42709.34 (389.84)	0.34
Chief's Maximum Salary (In 1982-84 Dollar)	49029.27 (652.77)	49861.71 (454.00)	0.30
Sergeant's Minimum Salary (In 1982-84 Dollar)	25884.24 (200.42)	25762.40 (200.42)	0.67
Sergeant's Maximum Salary (In 1982-84 Dollar)	29570.55 (215.59)	30117.74 (231.13)	0.08
Population	103239.60 (4752.34)	101636.1 (4815.60)	0.81
Total Number of Police Officers	236.42 (13.16)	229.16 (13.14)	0.70
Reported Crimes	7075.69 (441.55)	6858.40 (439.25)	0.73
Cleared Crimes	1815.18 (100.77)	1755.36 (102.06)	0.68
N	1136	1129	-

Table 3 Percentage of Reporting Agencies That Consider Each Task Their Primary Task

Task Type	Immediately Before Adoption	Immediately After Adoption
Homicide Investigation	91%	88%
Other Violent Crime Investigation	95%	92%
Arson Investigation	97%	92%
Other Propery Crime Investigation	80%	73%
Accident Investigation	89%	90%
Drugs & Vices Investigation	88%	82%
Patrol	99%	98%
Warrant	96%	93%
Dispatch	84%	93%
Tactical	69%	67%
Parking	73%	68%

1.6.2 Effect of Performance Pay on Total Reported and Cleared Crimes

I first look at how adoptions of performance pay impact the total levels of crimes associated with the adopting agencies. I start from a baseline OLS regression to examine the relationship between performance pay adoption and total levels of crimes reported and cleared. I estimate the following models:

$$Log(\text{Re}portedCrime_{it}) = \alpha_0 + \alpha_1 * PerfPay_{it} + X_{it} + \varepsilon_{it}$$
$$Log(ClearedCrime_{it}) = \alpha_0 + \alpha_1 * PerfPay_{it} + X_{it} + \alpha_3 Log(\text{Re}portedCrime_{it}) + \varepsilon_{it}$$

Here X_{it} includes controls such as the numbers of officers per agency, local population, median household income, income gap, unemployment rate, the number of weeks that individuals look for jobs while unemployed, sex ratio, ethnic composition, median education levels of the community protected by each agency, and year fixed effects[10]. The OLS results are presented in Table 4, columns (1) and (4). At first glance, performance pay is strongly and significantly correlated with increase in reported crime and small increase in the number of solved cases. Since summary statistics suggest that agencies that adopt performance pay are significantly different from agencies that do not adopt, I include controls for agency specific characteristics with agency dummy variables in columns (2) and (5). After controlling for agency fixed effects, performance pay is observed to be negatively and insignificantly associated with reported crime levels, but remains positively

[10] I included year fixed effects to control for the general declining trend in crime in the 1990's. Although Imrohoroglu et al. (2004) and Levitt (2004) have found that this decline has little to do with the particular policing strategies used, the chronological nature of performance pay adoption prompts the need to control for time trends.

albeit insignificantly associated with cleared crime levels. The change in results confirms that agencies that adopt performance pay are indeed very different from agencies that do no adopt. In particular, *ceteris paribas*, agencies that adopt performance pay are more likely to experience higher levels of crime than agencies that do not adopt performance pay.

Table 4. Effect of Performance Pay on Total Reported and Cleared Crimes

Y = Log(All Reported Crimes)			
	(1)	(2)	(3)
Perf. Pay	0.666 (0.117)***	-0.010 (0.019)	-0.016 (0.017)
Constant	10.339 (2.828)***	6.099 (0.667)***	10.183 (9.220)
N	8,722	8,722	8,722
Adjusted R^2	0.50	0.02	0.08
F	48.34	4.88	57,254,751.52
$E[e^Y]$	4,239.42	4,239.42	4,239.42
Controls	Demographics, Year FE	Demographics, Year FE, Agency FE	Demographics, Year FE, Agency FE, MSA Trends

Y = Log(All Cleared Crimes)			
	(4)	(5)	(6)
Perf. Pay	0.057 (0.032)*	0.008 (0.018)	0.005 (0.018)
Constant	-0.566 (0.785)	0.792 (0.520)	4.010 (8.789)
N	8722	8722	8722
Adjusted R^2	0.94	0.36	0.39
F	1,937.23	20.90	249,138,827.59
$E[e^Y]$	1,089.63	1,089.63	1,089.63
Controls	Demographics, Year FE	Demographics, Year FE, Agency FE	Demographics, Year FE, Agency FE, MSA Trends

Note: All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%

For robustness, further controls for Metropolitan Statistical Area (MSA) trends are included. As shown in column (3) and (6), the estimates remain near zero and insignificant. In conclusion, performance pay adoption appears to have no effect on the total levels of crimes reported and cleared.

1.6.3 Effect of Performance Pay on the Composition of Reported and Cleared Crimes

As Holmstrom and Milgrom's (Holmstrom and Milgrom, 1991, 1994) multitasking theory suggests, agencies can react to performance pay by deploying more effort into the more

easily measurable tasks and less into the less measurable tasks. If law enforcement agencies indeed gamed the performance pay system, we should observe increases in the reported and cleared levels of some crime categories, and decreases in other categories. As a result, while the sum total of all crimes reported and cleared may stay the same, the composition of the crimes reported and cleared might have changed in response to performance pay adoption.

I look at the relationship between performance pay and reported/cleared levels of individual categories of crime controlling for year fixed effects, agency fixed effects, MSA trends, and demographics. Table 5.1 presents the regression results on general categories of crime such as murder, rape, aggravated assault, robbery, burglary, larceny, and vehicle thefts[11]. Tables 5.2-5.6 present results on finer classifications of crime including forcible rape, attempted rape, assault using firearms, assault using knives or other cutting instruments, assault using other dangerous weapons, assault using hands, feet or fists, robbery using firearms, robbery using knives or other cutting instruments, robbery using other dangerous weapons, robbery using strong arms, burglary with forcible entry, burglary with no forcible entry, burglary with attempted entry, vehicle theft of automobiles, vehicle theft of trucks and buses, and vehicle thefts of other automobiles[12].

The results offer weak evidence on incentive-induced gaming behavior. Table 5.1 show that for general categories of crime, performance pay barely had any influence on either the reported or cleared levels of crime. A 3.1% decrease in numbers of cleared robberies is associated with performance pay adoption, but the estimate is only significant at the 10% confidence interval. Among finer classifications of crimes, performance pay is associated with a 6.5% decrease in the number of reported assaults using firearms, and a 6.2% decrease in the number of reported burglaries with forcible entry. For all other finer categories of crimes, performance pay is observed to have a negative but insignificant relationship with the number of reported crimes, and a mixed relationship with the number of cleared crimes. The evidence suggests that police officers may have responded by slightly shifting attention away from solving crimes to deterring selected types of crimes.

[11] These crimes, along with manslaughter, non-aggravated assault, and arson, comprise the universe of all recorded crimes. Manslaughter and non-aggravated assault are excluded from the study because of their nature as crimes of passion that police efforts cannot control. Non-aggravated assault also suffers from tremendous underreporting. Finally, arson is excluded because it is not recorded in all studied years.

[12] These crimes represent all subcategories of rape, assault, robbery, burglary, and vehicle theft.

Table 5.1 Effect of Performance Pay on Each Type of Crime

	Log(Reported Murders)	Log(Reported Rapes)	Log(Reported Assaults)	Log(Reported Robberies)	Log(Reported Burglaries)	Log(Reported Larcenies)	Log(Reported Vehicle Thefts)
Perf. Pay	-0.015 (0.021)	-0.002 (0.020)	-0.054 (0.034)	-0.017 (0.018)	-0.023 (0.017)	-0.033 (0.028)	-0.011 (0.019)
Constant	-16.153 (11.729)	12.201 (11.509)	5.381 (17.776)	-20.388 (16.102)	35.803 (8.484)***	20.295 (8.625)	24.668 (18.138)
N	8722	8721	8722	8722	8722	8722	8722
Adjusted R^2	0.02	0.00	0.00	0.01	0.03	0.00	0.00
F	1.59e+10	2.40e+10	32776281.58	311761022.08	340817158.79	302495348.00	327289764.47
$E[e^Y]$	5.80	27.23	103.06	146.28	667.61	2002.73	422.88
Controls	Demographics, Year FE, Agency FE, MSA Trends						

	Log(Cleared Murders)	Log(Cleared Rapes)	Log(Cleared Assaults)	Log(Cleared Robberies)	Log(Cleared Burglaries)	Log(Cleared Larcenies)	Log(Cleared Vehicle Thefts)
Perf. Pay	0.007 (0.014)	-0.035 (0.023)	0.027 (0.024)	-0.032 (0.018)*	-0.030 (0.022)	-0.014 (0.022)	-0.017 (0.025)
Constant	3.546 (5.766)	16.522 (7.126)***	-6.831 (8.064)	1.082 (9.330)	28.661 (12.659)	25.624 (10.346)***	20.115 (12.079)*
N	8722	8721	8102	8722	8722	8722	8722
Adjusted R^2	0.00	0.01	0.00	0.00	0.00	0.00	0.00
F	9452408.48	88775580.71	130581399.04	69120396.08	799214061.42	476281093.86	3804629.09
$E[e^Y]$	3.58	12.60	99.93	34.30	77.84	358.18	52.45
Controls	Demographics, Year FE, Agency FE, MSA Trends						

Note: All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 5.2 Rapes

	Log(Reported Forcible Rapes)	Log(Reported Attempted Rapes)
Perf. Pay	-0.031 (0.026)	-0.003 (0.030)
Constant	-0.220 (12.602)	77.544 (10.622)***
N	8721	8718
Adjusted R^2	0.00	0.01
F	2966003.59	7257229.46
$E[e^Y]$	23.64	3.32
Controls	Demographics, Year FE, Agency FE, MSA Trends	

	Log(Cleared Forcible Rapes)	Log(Cleared Attempted Rapes)
Perf. Pay	-0.019 (0.025)	-0.009 (0.018)
Constant	9.555 (7.728)	13.281 (5.590)**
N	8721	8718
Adjusted R^2	0.00	0.02
F	585731810.32	1.08e+09
$E[e^Y]$	10.98	1.46
Controls	Demographics, Year FE, Agency FE, MSA Trends	

Note: All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 5.3 Assaults

	Log(Reported Assaults Using Firearms)	Log(Reported Assaults Using Knives or Other Cutting Instruments)	Log(Reported Assault Using Other Dangerous Weapons)	Log(Reported Assaults Using Hands, Fists, or Feet)
Perf. Pay	-0.067 (0.032)**	-0.002 (0.039)	-0.047 (0.036)	-0.004 (0.048)
Constant	2.111 (16.946)	3.450 (15.366)	-2.103 (14.910)	30.785 (23.493)
N	8722	8722	8722	8722
Adjusted R^2	0.03	0.00	0.00	0.00
F	154480389.87	30969519.08	1776735.29	110030620.97
$E[e^Y]$	66.60	46.95	89.51	60.47
Controls	Demographics, Year FE, Agency FE, MSA Trends			

	Log(Cleared Assaults Using Firearms)	Log(Cleared Assaults Using Knives or Other Cutting Inst.)	Log(Cleared Assault Using Other Dangerous Weapons)	Log(Cleared Assaults Using Hands, Fists, or Feet)
Perf. Pay	0.016 (0.022)	-0.004 (0.023)	0.022 (0.022)	0.001 (0.024)
Constant	13.532 (10.511)	8.947 (6.706)	-23.395 (21.725)	-7.066 (9.660)
N	8722	8722	8101	8722
Adjusted R^2	0.01	0.00	0.00	0.00
F	632102945.64	243037811.72	2908.07	616746633.50
$E[e^Y]$	26.61	28.29	46.52	35.83
Controls	Demographics, Year FE, Agency FE, MSA Trends			

Note: All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 5.4 Robberies

	Log(Reported Robberies Using Firearms)	Log(Reported Robberies Using Knives or Other Cutting Instruments)	Log(Reported Robberies Using Other Dangerous Weapons)	Log(Reported Robberies Using Strong Arms)
Perf. Pay	-0.036 (0.031)	-0.022 (0.033)	-0.019 (0.031)	-0.014 (0.030
Constant	-12.719 (15.471)	24.930 (14.251)*	-0.348 (11.815)	1.383 (12.261)
N	8722	8722	8722	8720
Adjusted R^2	0.02	0.01	0.01	0.01
F	1.08e+09	570778632.12	389814659.55	968270705.49
$E[e^Y]$	62.92	12.78	13.15	56.92
Controls	Demographics, Year FE, Agency FE, MSA Trends			

	Log(Cleared Robberies Using Firearms)	Log(Cleared Robberies Using Knives or Other Cutting Instruments)	Log(Cleared Robberies Using Other Dangerous Weapons)	Log(Cleared) Robberies Using Strong Arms)
Perf. Pay	0.014 (0.022)	-0.010 (0.022)	-0.010 (0.020)	-0.020 (0.021)
Constant	3.412 (9.959)	14.290 (8.154)*	-7.863 (8.122)	-11.461 (10.937)
N	8722	8721	8722	8720
Adjusted R^2	0.00	0.00	0.00	0.00
F	7711255.26	245885893.28	117444702.53	6.54e+09
$E[e^Y]$	12.34	3.14	3.24	14.88
Controls	Demographics, Year FE, Agency FE, MSA Trends			

Note: All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 5.5 Burglaries

	Log(Reported Burglaries with Forcible Entry)	Log(Reported Burglaries With No Forcible Entry)	Log(Reported Burglaries with Attempted Entry)
Perf. Pay	-0.064 (0.035)*	-0.030 (0.041)	-0.023 (0.040)
Constant	58.006 (12.663)***	-11.018 (16.902)	99.695 (16.675)
N	8722	8722	8721
Adjusted R^2	0.01	0.00	0.00
F	54584274.20	402366633.74	52162912.40
$E[e^Y]$	445.20	170.55	55.33
Controls	Demographics, Year FE, Agency FE, MSA Trends		

	Log(Cleared Burglaries with Forcible Entry)	Log(Cleared Burglaries With No Forcible Entry)	Log(Cleared Burglaries with Attempted Entry)
Perf. Pay	-0.004 (0.028)	-0.022 (0.026)	-0.042 (0.028
Constant	26.521 (12.716)**	0.738 (11.490)	24.523 (9.540)**
N	8722	8722	8721
Adjusted R^2	0.00	0.00	0.01
F	1.53e+09	139558408.56	9962134.50
$E[e^Y]$	77.84	50.69	21.62
Controls	Demographics, Year FE, Agency FE, MSA Trends		

Note: All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 5.6 Vehicle Thefts

	Log(Reported Vehicle Theft of Automobiles)	Log(Reported Vehicle Theft of Trucks and Buses)	Log(Reported Vehicle Theft of Other Automobiles)
Perf. Pay	-0.035 (0.033)	-0.043 (0.043)	-0.031 (0.042)
Constant	17.575 (20.140)	19.472 (22.112)	9.219 (15.220)
N	8722	8722	8721
Adjusted R^2	0.00	0.00	0.00
F	33253834.74	553333311.34	11232284.00
$E[e^Y]$	308.54	86.70	22.87
Controls	Demographics, Year FE, Agency FE, MSA Trends		

	Log(Cleared Vehicle Theft of Automobiles)	Log(Cleared Vehicle Theft of Trucks and Buses)	Log(Cleared Vehicle Theft of Other Automobiles)
Perf. Pay	-0.004 (0.028)	-0.005 (0.029)	-0.038 (0.024)
Constant	18.083 (12.239)	21.665 (10.780**	36.885 (9.210***
N	8722	8722	8721
Adjusted R^2	0.00	0.00	0.00
F	4.90e+09	5.99e+09	2.10e+09
$E[e^Y]$	39.64	9.18	3.04
Controls	Demographics, Year FE, Agency FE, MSA Trends		

Note: All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%

1.6.4 Using Alternative Measures to Capture Performance Pay Adoption

A critique to the use of a binary measure to capture performance pay adoption is that performance pay comes in all sizes and shapes that they should not be treated equally. For example, agencies that base 1% and 100% of their employees' salaries on performance pay are considered the same by a binary measure of performance pay. In this section, I try to address this problem by looking at an alternative measure of performance pay: the difference between maximum and minimum pays for employees.

The LEMAS survey asks each agency what is the maximum and minimum pay that an officer of a certain rank receives. Through five survey cycles, the maximum and minimum pay of two pay grades are recorded consistently – chief pay and sergeant pay. To confirm that performance pay meaningfully affected the way police officers are compensated, I look at how Δ(chiefpay) and Δ(sergpay), the gap between maximum and minimum pay for chiefs and sergeants, are related to performance pay adoption.

As Table 6 shows, controlling for demographics, year fixed effects, agency fixed effect and MSA trends, an agency that adopts performance pay experiences a 60.6% increase in the pay gap awarded to sergeants, the estimate is significant at the 1% confidence level. While a similar coefficient is found for police chiefs, the estimate is not significant. The large and significant effect on sergeants suggests that the difference between maximum and minimum pay for sergeants can be used as an alternative measure of to what degree agencies have implemented performance pay[13]. I retain gaps in chief pay for control.

Table 6 Effect of Performance Pay on the Difference Between Maximum and Minimum Pay

	Log(ΔChief Pay)	Log(ΔSergeant Pay)
Perf. Pay	0.392 (0.268)	0.445 (0.159)***
Constant	-265.193 (58.819)	-252.688 (69.058)***
N	8618	8289
Adjusted R^2	0.00	0.00
F	1.83×10^8	4.83×10^8
$E[e^Y]$	5237.81	3559.45
Controls	Demographics, Year FE, Agency FE, MSA Trends	

Note: All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%

[13] I stay agnostic toward why we see no significant relationship between performance pay implementation and pay gap for police chiefs. I suspect that organizational structure may be one factor. Many agencies have multiple police sergeants, but only one police chief and on occasion a few assistant chiefs. As a result, the difference in pay for chiefs often reflects difference across ranks rather than difference within ranks that is associated with performance pay. For the purpose of this study, I retain the chief's pay gaps for control.

Tables 7 present estimates of the relationship between *Log(ΔSergeant Pay)* and total reported and cleared crime levels. As before, I find no significant relationship between pay gaps and total reported or cleared crimes.

Table 7. Effect of Pay Gap on Total Reported and Cleared Crimes

	Log(All Reported Crimes)	Log(All Cleared Crimes)
Log(ΔChief)	-0.001 (0.001)	-0.002 (0.002)
Log(ΔSergeant)	0.001 (0.002)	0.001 (0.003)
Constant	17.202 (7.136)**	-7.332 (6.410)
N	8877	8877
Adjusted R^2	0.00	0.00
F	$2.94x10^7$	$1.00x10^8$
$E[e^Y]$	4239.42	1089.63
Controls	Demographics, Year FE, Agency FE, MSA Trends	

Note: All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%

The relationship between pay gaps and individual types of crimes is shows in Table 8. A 1% increase in sergeants' pay differences is observed to be associated with a 0.4% decrease in the number of reported murders and a 0.9% decrease in the number of reported rapes. Given the average within agency differences between maximum and minimum sergeant pay, a $589 increase in the difference between maximum and minimum sergeant pay is associated with 0.23 fewer reported murders and 2.45 fewer reported rapes on average. I find no significant correlation between *ΔSergeant Pay* and other types of crimes.

In summary, using alternative measures of performance pay implementation, I find that (1) performance pay has very little effect on the numbers of crime reported and cleared, and (2) there is weak evidence for agency-level multitasking behavior. Gaps in sergeant pay are associated with significant but small decreases in reported murders and rapes, and we observe no effect of performance pay on cleared crimes. In addition, the crimes found to be affected by performance pay in the pay gap model is different from the crimes found to be affected by performance pay in the binary adoption measure model. The sparse and unstable significance in results suggest that the effect of performance pay is marginal and weak.

Table 8. Effect of Pay Gap on Each Types of Crimes

	Log(Reported Murders)	Log(Reported Rapes)	Log(Reported Assaults)	Log(Reported Robberies)	Log(Reported Burglaries)	Log(Reported Larcenies)	Log(Reported Vehicle Thefts)
Log(ΔChief)	0.003 (0.002)	0.005 (0.002)*	-0.001 (0.003)	0.000 (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.001 (0.002)
Log(ΔSergeant)	-0.004 (0.002)*	-0.010 (0.004)**	-0.004 (0.004)	-0.004 (0.003)	0.002 (0.002)	0.000 (0.004)	0.002 (0.003)
Constant	-3.186 (9.893)	22.661 (13.499)*	30.110 (15.946)*	11.160 (10.495)	60.889 (8.899)***	19.245 (6.607)***	21.222 (9.307)**
N	8877	8876	8877	8877	8877	8877	8877
Adjusted R^2	0.01	0.00	0.00	0.01	0.01	0.00	0.00
F	$7.15x10^9$	$8.29x10^8$	$1.62x10^7$	$2.56x10^7$	$1.08x10^6$	$6.77x10^7$	929434809.69
$E[e^Y]$	5.80	27.23	103.06	146.28	667.61	2002.73	422.88
Controls	Demographics, Year FE, Agency FE, MSA Trends						

	Log(Cleared Murders)	Log(Cleared Rapes)	Log(Cleared Assaults)	Log(Cleared Robberies)	Log(Cleared Burglaries)	Log(Cleared Larcenies)	Log(Cleared Vehicle Thefts)
Log(ΔChief)	-0.001 (0.002)	-0.002 (0.003)	-0.007 (0.002)***	-0.001 (0.002)	-0.000 (0.003)	-0.001 (0.002)	-0.004 (0.003)
Log(ΔSergeant)	-0.001 (0.002)	-0.002 (0.003)	0.004 (0.003)	-0.003 (0.003)	-0.003 (0.003)	-0.000 (0.003)	-0.000 (0.004)
Constant	5.869 (4.118)	10.109 (8.290)	-23.606 (21.876)	3.213 (6.528)	24.772 (9.362)***	23.883 (9.104)***	17.951 (11.399)
N	8877	8876	8324	8877	8877	8877	8877
Adjusted R^2	0.00	0.01	0.00	0.00	0.00	0.00	0.00
F	$7.74x10^8$	$7.52x10^8$	$9.60x10^8$	$8.45x10^8$	$9.93x10^9$	1.12e+09	$1.66x10^9$
$E[e^Y]$	3.58	12.60	99.93	34.30	77.84	358.18	52.45
Controls	Demographics, Year FE, Agency FE, MSA Trends						

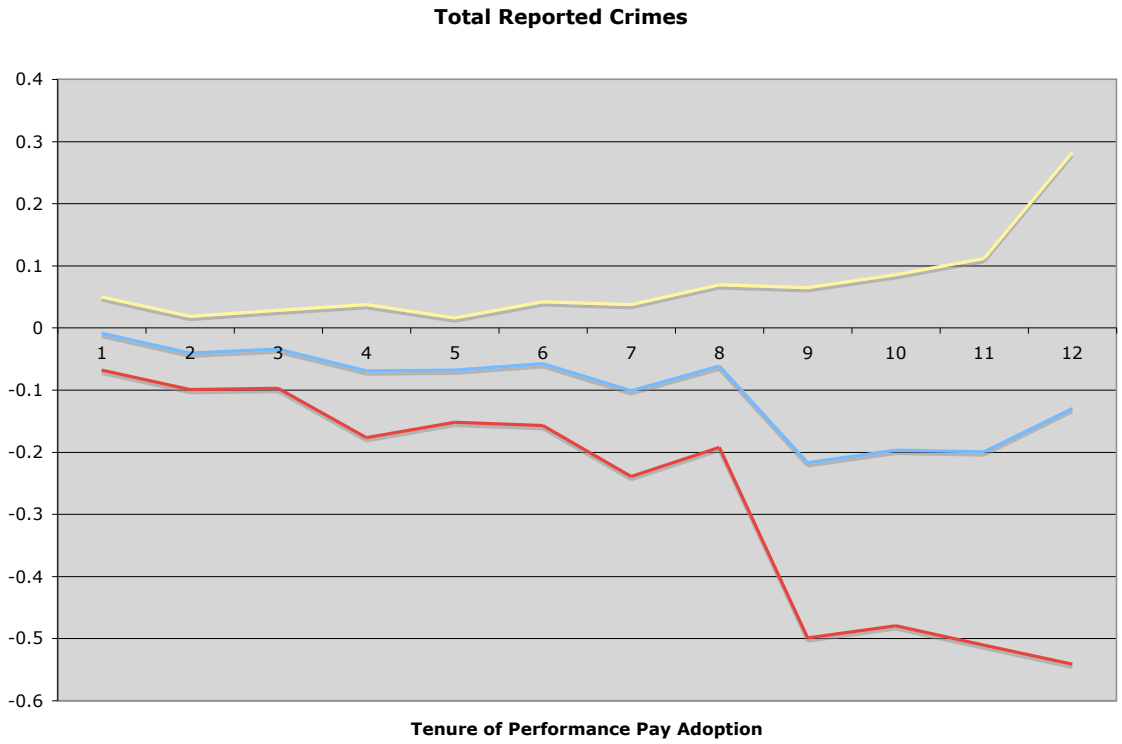
Note: All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%

1.6.5 The Effect of Performance Pay Adoption Over Time

A common concern that policy analysts have is over the time-varying effects of policies. To understand the evolution of policy effects over time, I look at the effect of performance pay over a ten years period, starting in the first year of adoption by each agency. More specifically, I define *tenure* as the number of years that an agency has had performance pay (If Palo Alto Police Department adopted performance pay in 1997, the *tenure* variable would take a value of 0 in 1996, 1 in 1997, 2 in 1998, and so on)[14]. I estimate the following model and graph the coefficient on *tenure* of 1-2 in Figures 2 and 3.

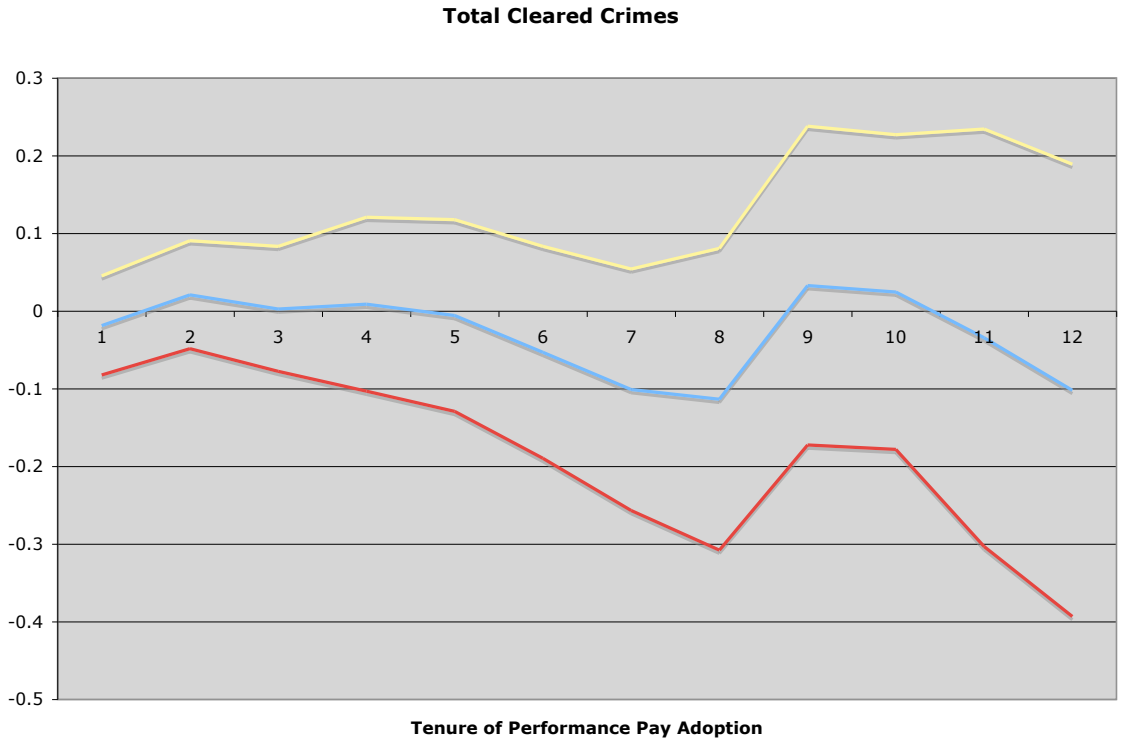
$$Log(Crime_{it}) = \beta_0 + \delta_1 * [tenure = 1] + ... + \delta_{12} * [tenure = 12] + X_{it} + Agency_i$$
$$+ Year_t + MSA_{it} * Year_{it} + \omega_{it}$$

Figure 2. Effect of Performance Pay Adoption on Reported Crimes Over Time (with 95% Confidence Intervals)



[14] Agencies that have either adopted performance pay before 1990 or never adopted performance pay are excluded from this study since their adoption *tenure* can not be measured. Furthermore, only the year immediately before performance pay adoption is considered to be a zero-*tenure* year. All previous *tenure* years are dropped to avoid biasing the zero-*tenure* year with prior trends.

Figure 3. Effect of Performance Pay Adoption on Cleared Crimes Over Time (with 95% Confidence Intervals)



Figures 2 and 3 show the effects of performance pay on reported and cleared crimes years after its adoption and its 95% confidence intervals. The negative effect of performance pay on total number reported crimes appears to have grown stronger over time, but as the sample size decreases when tenure increase, the estimates become less significant over time. However, performance pay appears to have no effect on the number of cleared crimes, and the lack of effect remains stagnant over time. In summary, the graphs suggest that performance pay may have a small long-term deterrent effect on crime, but does not appear to increase agencies abilities to solve crime in the long run.

1.7 Discussion

A central issue that is not addressed in this paper is the self-selection of agencies into using performance pay. As Table 1 shows, agencies that never use performance pay are significantly different from agencies that use performance pay. Therefore, the results of this study should be interpreted as findings on the effect of performance pay among agencies that self-selected to adopt performance pay[15].

[15] Propensity score matching has been attempted to address the issue of selection. However, there is not sufficient observable to form a reliable comparison group.

The selection issue, however, may not impact the findings of this study much for two reasons. As we see from empirical analysis, agencies that implemented performance pay experience very little change in reported and cleared crimes as a result of performance pay. The standard selection model argues that agencies that expect to benefit more from performance pay would self-select to implement performance pay. Suppose agencies did self-select to adopt performance pay, if expectations were accurate, then the findings of this study would constitute an upper bound on the effects of performance pay. Since performance pay is found to have very little effect on even the adopters, it is unlikely to have much effect on the non-adopters.

Furthermore, conversations with city and state personnel officials reveal that the decision to implement performance pay is often not made at the agency level, but at the city level. As discussed previously, municipal governments often adopt performance pay in a wholesale fashion across multiple departments. Thus, the decision to adopt performance pay is often driven by city government politics rather than the need of individual agencies. While there is likely positive correlation between the two, the confounding effect of politics makes the self-selection much weaker.

This paper mostly relies on a single measure of performance pay implementation. While this measure enables us to capture the use of performance pay across thousands of agencies, the simplicity of the measure makes it impossible to differentiate between productivity-enhancing performance pay regimes and productivity-degrading ones. Perusal of labor contracts between law enforcement agencies and unions suggests that agencies vary significantly over the magnitude of performance pay and the manner in which it is administered. As Ingraham (1993) notices, the central issues that riddle performance pay systems in the U.S. are the lack of guidelines to measure or reward performance and the lack of adequate funding to fulfill the pay for performance promises. Therefore, it should not be surprising that better-run and better funded systems are likely to benefit more from performance pay than others. As examples of the performance pay schemes used by the City of Concord and the City of Vacaville demonstrate, performance is precisely measured and tied to significant amounts of awards in some cities, while the opposite is true in others. It is very likely, therefore, that the variations in the magnitude of performance pay and the manner of its administration have resulted in vastly different effects of performance pay on the productivity of the affected agencies.

I attempt to partially address the variation in performance pay schemes by using the gap between maximum and minimum pay of sergeants to capture the magnitude of performance pay adoption. However, the power of this alternative measure is limited since the measure is mute on other qualities of the pay regime within the agency. For example, the magnitude of performance pay within each agency and the extent of performance pay usage would have been very informative. However, these measures are not available universally across all agencies[16]. The ideal way to address this shortcoming is to collect a

[16] This information is available in Memorandums of Understanding (MOU) for agencies that have contracted with IEDA to safekeep and analyze their labor contracts.

better measure of performance pay. A new survey would include questions such as "for how long have your agency used performance pay", "on average, how many percent of an officer/sergeant/chief's pay determined by performance pay", "how many employees have you terminated in the past year for performance reasons", etc. With a better measure of performance pay implementation, we may be able to more finely distinguish what factors enable agencies to benefit from performance pay.

1.8 Conclusion

Despite the controversy over the effects of performance pay in the public sector, city and states in the U.S. have increasingly begun to adopt performance pay into their compensation scheme. This study attempts to contribute to our understanding of such performance-based pays by analyzing the effect of performance pay adoption on law enforcement agencies across the U.S.

This study finds that there are significant intrinsic differences between the adopters and non-adopters that may or may not be related to self-selection of performance pay adoption. When these intrinsic differences are controlled for, performance pay is found to have no effect on the productivity of the adopting agencies. The lack of effect is confirmed using different specifications and alternative measurements of performance pay. The results support Baker's (1992, 2002) theory that when productivity is difficult to measure, paying for performance would enlist no significant effort change from agents, and is thus inferior to a flat incentive system.

Furthermore, the evidence shows that performance pay causes small changes in the distribution of efforts across different types of crime, where the results are marginally significant and unstable to changes in specification. In other words, while performance pay may have caused gaming behavior among affected police agencies, the change is too small to be convincingly captured in the data.

Examination of the progression of performance pay's effect on adopting agencies reveals the negative effect of performance pay on the number of reported rapes and larcenies appears to grow stronger over time, while the variance of the effect appears to increase in the same period. The effect of performance pay on all other reported and cleared crimes remains stagnant over time.

Finally, I acknowledge that this study has some significant shortcoming that can be overcome with additional data. The most worrisome, and at the same time the most promising for future work, is the difference in quality among performance pay contracts used. Analysis of MOUs of California cities reveal that indeed, some agencies adopt a sophisticated performance pay scheme that seeks to precisely and fairly measure performance, and tie performance evaluations to a significant amount of monetary reward, while others have no concrete way to measure performance and allocates a very small amount of money to pay for performance. If more information about the way that

performance pay is administered can be collected in a large scale, we can certainly gain a great deal of understanding of what type of performance pay schemes are potentially productivity-enhancing for public agencies, and what types are not.

2 Chapter 2: An Empirical Analysis of Campaign Contributions as Investments – Evidence From 1998-2006 Congressional Elections

2.1.1 Introduction

Since the Federal Elections Committee (FEC) started collecting and publishing data on interest group contribution to candidates in the 1980s, many scholars have studied these contributions to better understand the relationship between campaign contribution and political outcomes. Some scholars believe that contributions are given mostly for ideological purposes, that is, interest groups act like individuals and give money for their own ideological consumption, or to help their favorite candidate win. Others believe that interest groups give campaign contribution to candidates in exchange for favor or access. Empirical work has found support for both theories.

In a seminal work "Campaign Contributions as Investment: The U.S. House of Representative, 1980-1986" (Snyder, 1990), Snyder hypothesizes that for interest groups who give for investment purposes, there should be a one to one relationship between contribution share and election outcome if certain conditions are satisfied. Snyder confirms his theory using data from house races between 1980 and 1986 and a definition of interest groups using their self-proclaimed interest group status.

In this paper we extend Snyder's work further by suggesting a different way to empirically identify interest groups. Instead of using the self-proclaimed interest group status, we identify investors by observing whether a Political Action Committee (PAC) has ever given to competing parties in a single race. We call such groups "diversifiers". We find that albeit small in number, diversifiers are responsible for most of the interest group contribution in congressional races between 1998 and 2006. Both definitions of investors yield similar results on the relationship between investor contribution share and election outcomes.

Using a similar specification, we look at the relationship between contribution share to date and election outcome in the future at earlier stages of races. We find that as early as when races have 10% of their investor contribution, or roughly 48 weeks before election day, there is a weak but significant relationship between investor contribution share and election outcomes. Our results indicate that investor who contribute have rational expectations about race outcomes throughout all periods of a race, and adjust their expected returns accordingly at earlier points of races.

Surprisingly, we also find that there is a largely similar relationship between contribution share and election outcome among contributions given by ideological groups. These

results are robust after we adjust for heteroskedasticity. However, compared to investor groups, ideological groups are slightly worse at forecasting election outcomes at early stages of the race, but exceed investor groups at later stages of the race. These results indicate that ideological contributors are not as good as investors at anticipating race outcomes at early stages of races, but concentrate their money at later stages to help candidates who are in tight races to win.

The rest of this paper is organized in the following manner: in section 2.2 we review some of the empirical work in the field of political contributions; in section 2.3 we summarize the data used for this analysis; in section 2.4 we replicate Snyder's results and suggest an alternative specification; in section 2.5 and 2.6 we introduce other definitions of investors and investigate if they yield different relationship between group contribution share and election outcomes; in section 2.7 and 2.8 we look back at earlier points of races and examine what the relationship between contribution share and election outcome is at the earlier stages of congressional races; in section 2.9 we test whether contribution share can be used to predict election outcomes using data from the 2008 Congressional elections; finally, we conclude in section 2.10.

2.2 Literature Review

Since the Federal Elections Committee started collecting comprehensive data on interest group contribution to candidates in the 1980's, much empirical work has been done on the relationship between interest groups and candidates. Most of work has focused on two types of actions – when interest group take the position of candidates to be fixed and give to support their favorite candidates; and when interest groups take the election outcome to be fixed and try to influence future policy outcomes. We call the first type of contribution ideological contribution and the second type of contribution investor contributions.

One of the first studies of campaign contributions was conducted by Jacobson (1980, 1985). He finds that while additional money received by challengers is associated with a significant increase in winning likelihood, additional money received by incumbents are correlated with a lower winning probability. Jacobson's work inspired a large body of studies that tried to investigate why this perverse relationship is observed. Green and Krasno (1988) find that the adverse relationship is actually caused by unaccounted for characteristics of races. They find that when challenger quality, diminishing returns to contribution dollars, interaction effects between challenger spending and other race characteristic such as challenger quality, and the endogenous relationship between incumbent spending and the threat that the incumbent faces are controlled for, the marginal effect of incumbent spending on winning likelihood is substantial and often on par with the marginal effect of incumbent spending [17]. In other words, contribution to incumbent appears to be made to support the winning likelihood of candidates.

[17] Green and Krasno's (1988) findings were corroborated by Ansolabehere (1990), Banaian and Luksetich (1991), and Gerber (1998)

If interest groups are contributing to help their favorite candidates win elections, then they should be more likely to give in close races when their money has a more pivotal effect on election outcomes. Indeed, Welch (1979) finds that ideological groups tend to focus their money on close races. Poole and Romer (1985) confirm that in general, incumbents in closer races receive a larger sum of money than incumbents in lopsided races. Moreover, based on an ideological index, they find that there is a strong correlation between the ideological position of contributors and recipients. Langbein (1993) finds that the high correlation between the ideological position of contributors and recipients are especially pronounced for ideological groups such as the National Rifle Association and Handgun Control Inc. Furthermore, contribution from ideological political action committees appears to have little or no effect on legislator's votes on ideological issues (Langbein, 1993; Kau and Rubin, 1982).

Not all contributions are made for ideological purposes, however. Jones and Kaiser (1987) study a group of issues with varying amounts of media coverage. They find that under low media coverage money from union-approved PACs has a larger effect than ideology or party affiliation in explaining candidate's votes on labor issues. However, in policies that are subject to much public scrutiny, ideology and party affiliation quickly exceeded the influence of contribution from union approved PACs.

A large literature finds that contributions from economic interest groups behave more like investments rather than ideological consumption spend. Welch (1980, 1981) notices that economic interest groups aim more money at likely winners. Snyder extends Welch's work and tests patterns of interest group contribution against theoretical models of interest groups behavior as investors, and finds that the contribution from economic interest groups fit the 'quid pro quo' model better than contribution from ideological groups and individuals (Snyder, 1990, 1992, 2006). Stratmann (1998) finds that PAC contributions are correlated with the voting schedule on relevant policies, independent of the electoral cycle. Many scholars also find that economic interest groups give more money to congressmen on important committees[18], supporting the theory that economic interest group give to enhance the likelihood of favorable policy outcomes.

A number of studies try to directly examine the relationship between campaign contribution and outcomes of specific policies and find varying results. Among others, Wright (1990) finds that contribution had little effect on the voting of 2 issues on the "Agricultural and the Ways and Means" committee. On the other end of the spectrum, Stratmann (1991) finds that PAC contributions had a large effect on farm subsidies – an issue with a very narrow focus where benefits are concentrated and costs are distributed widely. Tosini and Tower (1987) find that contribution from textile interest groups had a significant effect on house representatives' voting behavior, but not on senators. Bronas

[18] See Bennett and Loucks (1994), Endersby and Munger (1992), Grenzke (189b), Grier and Munger (1986, 1991), Munger (1989), Romer and Snyder (1994), Saltman (1987), Stratmann (1991), Welch (1982), and Wilhite and Theilmann (1987).

and Lott, Jr. (1997) find that politicians in their last term do not alter their voting behavior significantly compared to their preceding term, indicating that interest groups had little influence on the voting behavior of politicians. Wawro (2001) studies the roll call votes of the 102nd, 103rd, and 104th Congress on business and labor related issues and finds that controlling for candidate's own ideological positions, contributions sometimes influence voting behavior of politicians, and other times do not. Given the large potential benefit that individual groups can reap from favorable policy outcome and the comparably smaller size of political contribution, Ansolabehere, de Figueiredo and Snyder (2003) suggest that perhaps contributions are largely given as an ideological consumption rather than investments.

In sum, empirical work in the field of political contributions indicates that interest groups give to candidates both for ideological and investment purposes. The mixed results may be due to a sleuth of factors, such as the timing of contributions, the interaction between varying political strategies that interest groups employ to influence politicians, the nature of the policies that interest group want to influence, and the difficulty in distinguishing investor interest groups from ideological interest groups. This paper seeks to contribute to this literature by offering an alternative method to identify investor interest groups, as well as offering a perspective of how interest groups behave in periods before an election.

2.3 Data

We use campaign contribution data published by the FEC between 1998 and 2006 in our analysis, and use data from 2008 to test our findings. In our dataset, we exclude campaign contributions from PACs that are Delegate committees, House committees, Presidential committees, Senate committees, Non-Qualified Party Committees, Qualified-Party Committees, National Party Organization Committees, Electioneering Communication Committees, committees designated as Joint Fund Raisers, Principal Campaign Committee of a Candidate, or Authorized by a Candidate, and committees whose name start with either "Democratic" or "Republican". Effectively, the excluded PACs are composed of strictly party or candidate specific groups. We exclude these groups for two reasons. First, since these PACs are formed for the sole purpose of electing an individual or a member of a particular party into, we feel that this is a group with no interest outside purely winning elections, and thus should not be compared to either investors or ideologues. Second, these groups use money in a different way from both investors and ideologues. Instead of transferring money directly from a non-political entity to a candidate, these groups often act as an intermediary to transfer money between parties and candidates, between candidates and candidates, or vice versa. As a result, including these groups may lead to an overstatement of money spent on campaign activities by interest groups. All remaining interest group money is then discounted to 1998 dollars using the Consumer Price Index (Bureau of Labor Statistics, 2010).

We obtain election records from two sources. We use U.S. House of Representatives Election Record to capture House and Senate results between 1998 and 2000. We use the

FEC Election Record to capture congressional election outcomes between 2002 and 2008. The latter is available with unique FEC Candidate Identification Numbers (Candidate ID) and can be merged precisely by Candidate ID with FEC contribution records. Unfortunately, it is only available from 2002 onward. For contributions to the 1998 and 2000 races, we merge candidates between the FEC contribution record and the House Election record by candidate name and state. We focus our analysis on contribution activity for election years 1998-2006, and use 2008 as an out of sample period to test some of our findings.

The merge results in 1,852 closed races, or races with an incumbent up for re-election, and 323 open races, or races with no incumbents for 5 election years between 1998 and 2006. A total of $1,058 million in contribution is given by 5,423 interest groups in our sample to candidates in closed races, and a total of $166 million in contribution is given by 3,668 interest groups in our sample to candidates in open races (Table 9).

On average, each closed house race raised $457,557 per race, each open house race raised $371,278 per race, each closed senate race raised $2,008,660 per race, and each open senate race raised $2,000,441 per race from interest groups in our sample (Table 10). [19]

Table 9 Composition of Interest Group Contribution 1998-2006

	Closed Races	Open Races
Number of Races	1852	323
Total Contribution ($Mil)	$1,058	$166
% of Money from diversified contributors	78.50%	71.32%
% of Money from economic interest groups	86.80%	76.60%
% of Money from undiversified economic interest groups	13.25%	11.24%
Total Number of Contributors	5423	3668
% of Contributors that are diversified	26.42%	36.61%
% of Contributors that are economic interest groups	71.01%	72.06%
% of Contributors that are undiversified economic interest groups	47.83%	39.78%

[19] Since candidates who have only received money from party-affiliated and candidate-specific interest groups are excluded, 129 candidates who won their respective races did not appear in our dataset. As a result, all contributions to these races are excluded from the ensuing analysis.

Table 10 Race characteristics

	Closed Races	Open Races
Number of races	1852	323
Number of House races	1716	296
Total per House race	457,557 (9,789)	371,278 (21,250)
Diversified contrib per House race	357,735 (7,828)	276,751 (18,081)
Undiversified contrib per House race	121,020 (8,786)	106,573 (13,950)
Economic interest group contrib per House race	404,587 (8,281)	295,547 (18,530)
Non-economic interest group contrib per House race	72,130 (8,568)	98,170 (14,452)
Undiversified economic interest group contrib per House race	66,847 (4,151)	41,690 (7,440)
Number of Senate races	136	28
Total per Senate race	2,008,660 (119,264)	2,000,441 (197,074)
Diversified contrib per Senate race	1,484,629 (90,336)	1,457,140 (162,044)
Undiversified contrib per Senate race	554,420 (90,813)	613,329 (148,966)
Economic interest group contrib per Senate race	1,699,226 (99,078)	1,499,638 (144,404)
Non-economic interest group contrib per Senate race	478,519 (154,214)	665,686 (352,011)
Undiversified Economic interest group contrib per House race	236,371 (35,056)	391,556 (156,564)
Dem Win	52.27%	46.59%
Rep Win	47.31%	51.70%

2.4 A Linear Probability Model of Campaign Contribution and Election Outcomes

Snyder (1990) hypothesizes that in open elections where no candidate has any advantage in the amount of favor that they can promise, a candidate's winning probability is equal to her share of investor race contributions in equilibrium. In other words, in a house race with two candidates that has raised $1 million dollars in total, if the Democratic candidate raised $0.6 million, then the Democratic candidate's probability of winning the race is exactly 40%. Snyder defines investors as economic interest groups. Specifically, these are interest groups associated with Corporations, Trade Groups, Labor Organizations, Membership Organizations and Cooperatives. Using contribution data for house races between 1980-1986, Snyder shows that this relationship indeed exists. Specifically, Snyder finds that in open races where no third party candidate received more than 10% of

the votes, and where no single candidate received more than 95% of the votes, the relationship between the share of contributions received by a candidate and her probability of winning is close to 1 and significant. Snyder's approach offers a very interesting perspective on how interest group contribution and election outcomes are linked and we try to build on his methodologies to gain more insight into this relationship.

First, using the same restrictions on investors and races, and the same linear probability model as Snyder, we look at the relationship between campaign contribution from economic interest groups and winning likelihood for open races between 1998 and 2006. We employ the following specification:

$$DemWin_{it} = \beta_0 + \beta_1 * DemShareInvContrib_{it} + ElectionYear_t + Senate_i + \varepsilon_{it}$$

As Table 11 shows, we find that the correlation between winning likelihood and contribution share between 1998 and 2006 is 1.16 for House races and 1.14 for all Congressional races. In other words, when a Democratic candidate's share of contribution increases by 1%, her probability of winning increases by 1.14%.

Snyder finds that there doesn't appear to be a detectable non-linearity in the relationship. Using a maximum likelihood model, we find that there is a significant S-shaped relationship between contribution share and winning likelihood. We use the following maximum likelihood specification:

$$\Pr ob(DemWin_{it} = 1) = \Psi(\delta_0 + \delta_1 * DemShrInvContrib_{it} + ElectionYear_t + Senate_i)$$

where Ψ is the logistic cumulative function.

Table 11 Regression results using a linear probability model

	House Races Only		Senate and House Races	
	(1)	(2)	(3)	(4)
Percentage of contribution from Economic Interest Groups	1.16 (0.04)***	1.16 (0.04)***	1.13 (0.05)***	1.14 (0.05)***
Constant	-0.17 (0.04)***	-0.12 (0.08)	-0.16 (0.04)***	-0.12 (0.07)*
N	147	147	170	170
R^2	0.64	0.65	0.60	0.61
Controls	-	Election Year	Senate FE	Senate FE, Election Year

Note: All errors are robust.

* Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 12 shows the average marginal effect, the marginal effect when a candidate has 25%, 50% and 75% of the race contribution, and their relevant z-statistics using a maximum likelihood mode. While the average marginal effect is 0.85 for all Congressional open races, democratic candidates who have only 25% of the total race contribution experience a

0.5% increase in probability of winning for a 1% increase in their contribution share; those who have 50% of the race contribution experience a 1.97% increase in probability of winning for a 1% in their contribution share; and those with 75% of the contribution experience a 1.23% increase in probability of winning for a 1% increase in contribution share. All three estimates are significant at the 99% confidence interval.

Table 12 Regression results using a maximum likelihood model and congressional races as units of observation

	House Races Only		Senate and House Races	
	(1)	(2)	(3)	(4)
Average effect of contribution share	0.84 (31.15)***	0.85 (28.60)***	0.84 (14.17)***	0.85 (14.80)***
Effect of contribution share at 25%	0.31 (1.85)*	0.28 (1.62)***	0.51 (3.49)***	0.50 (3.43)***
Effect of contribution share at 50%	2.24 (7.63)***	2.20 (8.07)***	2.02 (7.55)***	1.97 (8.38)***
Effect of contribution share at 75%	1.27 (5.26)***	1.37 (5.57)***	1.21 (6.27)***	1.23 (6.55)***
N	147	147	170	170
Controls	-	Election Year	Senate FE	Senate FE, Election year

Note: Marginal effect and Z-statistics are reported. All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%.

The S-Shaped relationship between contribution share and election outcome suggests that the incremental effect of contribution share is larger for candidates who have 50% of the group contribution, and smaller for candidates who have 25% or 75% of the contribution. In other words, race outcome for candidates who have either very little or most of the race contribution are mostly determined and unlikely to change with any incremental contribution.; race outcome for candidates who have 50% of the contribution is more uncertain and can benefits much more from an incremental unit of contribution share.

For the remainder of this paper, we will continue to employ the maximum likelihood model to analyze the relationship contribution share and winning likelihood in order to capture this non-linearity.

2.5 Who Is An Investor and Who Is An Ideologue?

A central question in the analysis of campaign contribution as investment is: who is an investor? Snyder defines investor contributors as contributors who give only "on a quid pro quo" basis and are interested only in private benefits to themselves" (Snyder, 1990). This definition likens political contributors to investors in an asset market who try to maximize their return through investment in risky assets. As a result, similar to asset investors, political investors seek returns in the form political favors while taking on the risk that the candidates they bought may not be elected.

Empirically, Snyder identifies investor through the self-declared interest group status that PACs report to the Federal Elections Committee. According to Snyder's definition, interest groups associated with Corporations, Labor Organizations, Trade Groups, Membership/Health Organizations, and Cooperatives are investors, and interest groups associated with corporations with no stock, and unassociated interest groups are ideologues. Effectively, Snyder singles out interest groups with clear selfish economic motives for whom a transfer of wealth is feasible as investor contributors, and the rest as ideological contributors. Snyder's approach does not distinguish between motives where the interest group agrees with the political stand of the candidate and where the interest groups purchases additional benefit from the candidate that they otherwise would not have gotten. Between 1998 and 2006, economic interest groups make up 71.01% of contributor in closed races and 72.06% of contributors in open races, are responsible for 86.80% of contribution to closed races and 76.60% of contribution to open races (Table 9). On average, economic interest groups give $404,587 per race to closed house races, $295,547 per race to open house races, $1,699,226 per race to closed senate races, and $1,499,638 per race to open senate races (Table 10).

One shortcoming with using self-declared interest group status to identify investors is that many interest groups can arbitrarily fall into one of many categories. For example, some corporation-sponsored interest groups rightly identify themselves as interested groups associated with Corporation. Others, however, form spin-off organizations with no asset for the sole purpose of political activities. Snyder considers the former an investor contributor and the latter as an ideological group[20]. Clearly, the latter should also be included as an investor contributor. On the other hand, interest groups whose positions closely align with candidates effectively behave like ideologues but are identified as economic interest groups according to Snyder's definition.

An alternative way to identify investors is through examination of the behavior of contributors. By definition, ideological contributors give money to support their favorite candidate and will under no condition give simultaneously to opposing candidates in a single race. An investor contributor, however, does not have a strong preference for who wins the race but cares that the he gives money to the winner. Thus, an investor contributor may find it rewarding under certain circumstance to hedge his bet by giving to competing candidates in order to maximize his risk adjusted return.

This dichotomy in contribution behavior allows us to separate contributors into two groups: those who have never given to competing candidates in one race, and those who have at some point given to competing candidates in one race. We quantify this distinction by identifying PACs who have at some point given more than 10% to candidate from competing parties in one race as "diversifiers".

[20] For instance, corporations with No Stock include groups such as the Council for Government Reform, as well as Anthem Insurance Companies Inc PAC and Dollar Saving Banks PAC, among others.

As Table 9 shows, diversifiers constitute a mere 36.61% of the number contributors who gave to open races, and 26.42% of the number of contributors who gave to closed races between 1998-2006. However, diversifier contribution account for 71.32% of total contribution given to open races, and 78.50% of total contribution given to closed races. On average, diversifier give a total of $276,751 per race to open house races, $357,735 per race to closed house races, $1,457,140 per race to open Senate races, and $1,484,629 per race to closed Senate races (Table 10)[21].

As Table 13 and 14 show, with a small number of exceptions, diversifiers are for the most part a subset of the self-declared economic interest groups. This gives us four types of contributors whose behavior we are interested in: self-declared economic interest groups (EIG), non-economic interest groups (NEIG), diversifiers, and undiversified economic interest group(UEIG). We expect diversifiers and EIG to behave as investors, and NEIG and UEIG to behave as ideologues.

Table 13 Number of Diversifiers and Economic Interest Groups

	Undiversified	Diversified
Non-economic interest groups	866	159
Economic interest groups	1,459	1,184

Table 14 Money from Diversifiers and Economic Interest Groups

	Undiversified	Diversified
Non-economic interest groups	$28.94	$9.89
Economic interest groups	$18.65	$108.42

2.6 Relationship between Total Contribution Share and Election Outcomes

Since many races have more than one candidate, and to increase the power of analysis, we use candidate-race as our unit of observation for the rest of this paper. Compared to Snyder's choice of using races as units of observation, our approach allows us to look at all candidates in a race without limiting our scope races to those where the top Democratic and Republican candidate have more than 90% of the vote share. With the increased number of observation, we are also able to control for candidate and race characteristics such as party effects and election year effects.

[21] There is a small group of contributors who are diversifiers but are not economic interest groups. This group consists of 159 political action committees and is responsible for $9.89 million in contribution between 1998 and 2006. For more information, see Tables 13 and 14.

Figure 4 Relationship between Contribution Share and Election Outcome in Diversifier Contribution

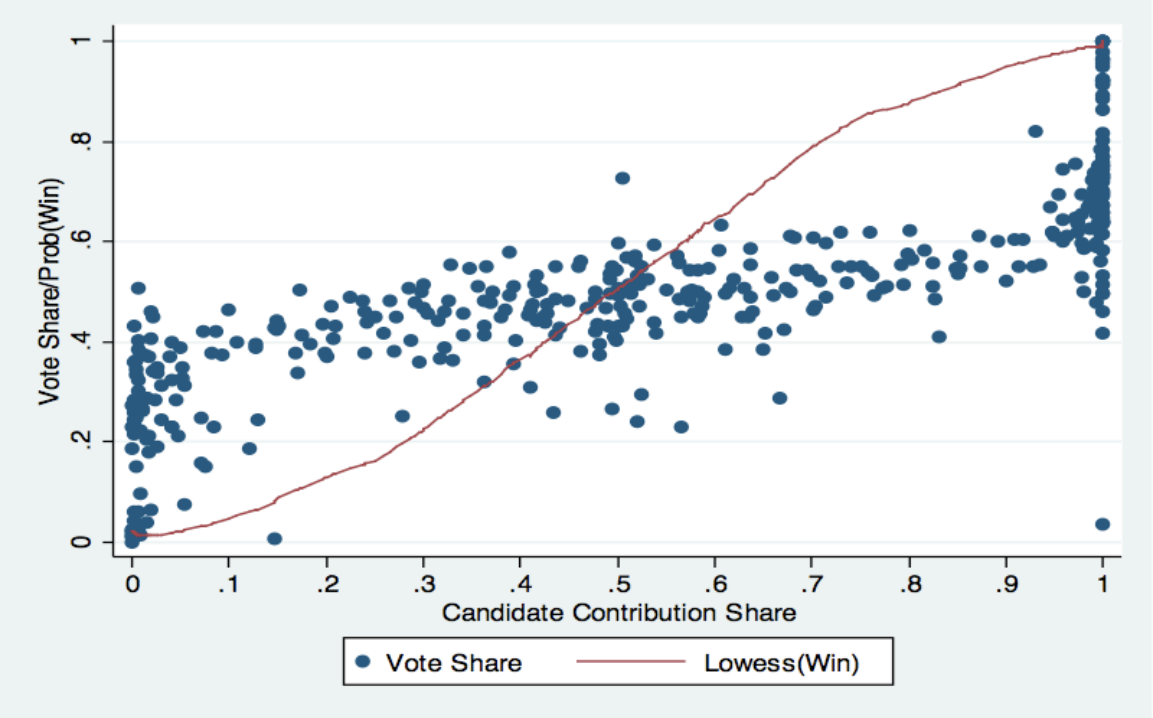
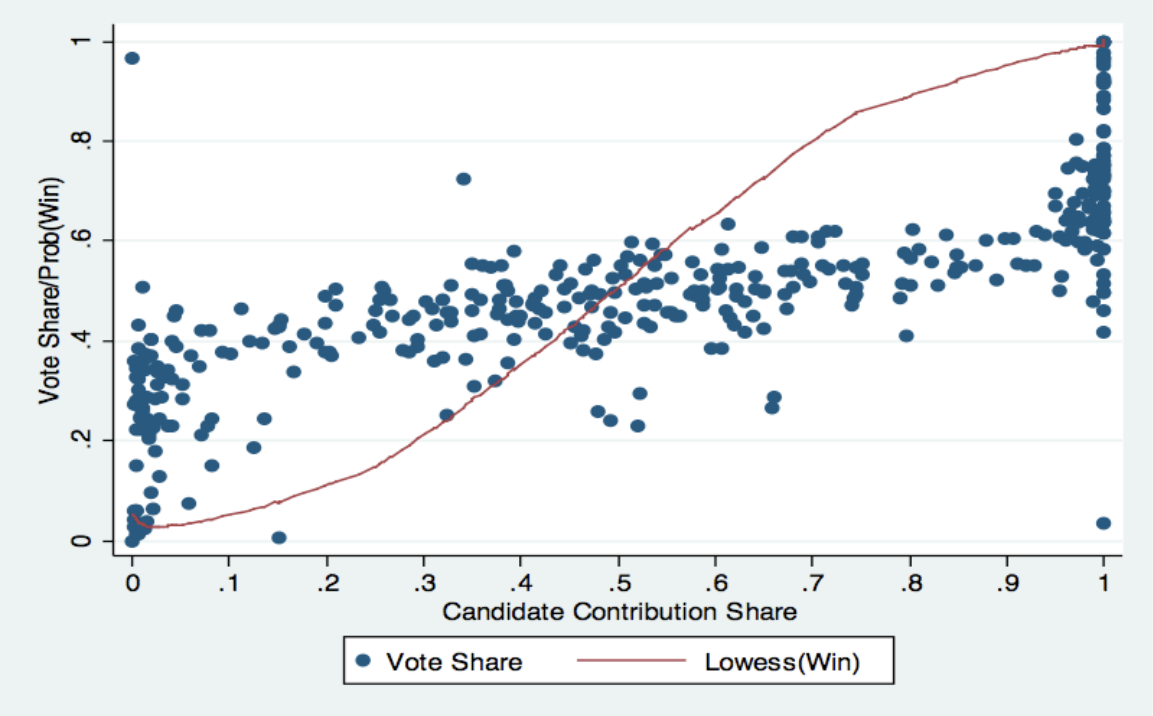


Figure 5 Relationship between Contribution Share and Election Outcome in Economic Interest Group Contribution



In Figures 4 and 5, we examine the relationship between candidate's contribution share and election outcome among money given by diversifiers and economic interest groups. As expected, we find an S-shaped relationship between investor contribution share and election outcome, where the curve is steepest when candidates have 40-60% of the investor contribution. We then analyze the relationship between contribution share received by each candidate and a binary win/lose measure using a maximum likelihood model.

Table 15 Marginal Effect of Contribution Share on Election Outcome Using Diversified Contribution

	(1)	(2)	(3)	(4)
Average effect of contribution share	0.80 (52.17)***	0.80 (51.73)***	0.78 (46.39)***	0.79 (38.80)***
Effect of contribution share at 25%	0.84 (7.14)***	0.84 (7.09)***	0.87 (7.38)***	0.89 (6.56)***
Effect of contribution share at 50%	2.09 (9.97)***	2.09 (9.97)***	1.99 (9.98)***	1.98 (9.92)***
Effect of contribution share at 75%	0.80 (6.99)***	0.79 (6.94)***	0.85 (7.18)***	0.83 (6.41)***
N	396	396	396	392
Controls	Senate	Senate, Election Year	Senate, Election Year, Party	Senate, Election Year, Party, State

Note: Marginal effect and Z-statistics are reported. All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 16 Marginal Effect of Contribution Share on Election Outcome using Economic Interest Group Contribution

	(1)	(2)	(3)	(4)
Average effect of contribution share	0.80 (58.78)***	0.81 (57.25)***	0.78 (51.38)***	0.80 (38.73)***
Effect of contribution share at 25%	0.87 (7.49)***	0.87 (7.43)***	0.90 (7.82)***	0.94 (7.39)***
Effect of contribution share at 50%	2.05 (10.05)***	2.05 (10.05)***	1.94 (10.07)***	1.93 (10.13)***
Effect of contribution share at 75%	0.79 (7.10)***	0.79 (7.08)***	0.84 (7.38)***	0.81 (6.54)***
N	391	391	391	387
Controls	Senate	Senate, Election Year	Senate, Election Year, Party	Senate, Election Year, Party, State

Note: Marginal effect and Z-statistics are reported. All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%.

As Tables 15 and 16 show, not surprisingly, there is a very similar relationship between contribution share and winning likelihood among money given by economic interest groups and diversifiers. Controlling for Senate/House, election year, candidate party, and election state, on average, a 1% increase in contribution share is associated with a 0.80%

increase in a candidate's probability of winning. For both groups, the marginal effect of contribution share is much larger when a candidate receives 50% of the race contribution than when she received 25% or 75% of the race contribution.

Table 17 Marginal Effect of Contribution Share on Election Outcome Using Undiversified Economic Interest Group Contribution

	(1)	(2)	(3)	(4)
Average effect of contribution share	0.90 (38.70)***	0.90 (37.67)***	0.87 (33.21)***	0.89 (27.72)***
Effect of contribution share at 25%	0.86 (6.98)***	0.86 (6.96)***	0.88 (7.20)***	0.92 (6.72)***
Effect of contribution share at 50%	2.14 (9.44)***	2.14 (9.44)***	2.07 (9.35)***	2.05 (9.27)***
Effect of contribution share at 75%	0.75 (6.57)***	0.75 (6.56)***	0.78 (6.74)***	0.76 (6.04)***
N	361	361	361	355
Controls	Senate	Senate, Election Year	Senate, Election Year, Party	Senate, Election Year, Party, State

Note: Marginal effect and Z-statistics are reported. All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 18 Marginal Effect of Contribution Share on Election Outcome using Non-Economic Interest Group Contribution

	(1)	(2)	(3)	(4)
Average effect of contribution share	0.77 (81.25)***	0.77 (80.52)***	0.87 (21.96)***	0.88 (20.43)***
Effect of contribution share at 25%	0.92 (9.21)***	0.92 (9.20)***	0.94 (8.86)***	0.96 (8.11)***
Effect of contribution share at 50%	1.74 (10.48)***	1.74 (10.48)	1.87 (11.23)***	1.86 (10.96)***
Effect of contribution share at 75%	0.85 (8.83)***	0.85 (8.81)***	0.82 (8.31)***	0.81 (7.43)***
N	382	382	382	378
Controls	Senate	Senate, Election Year	Senate, Election Year, Party	Senate, Election Year, Party, State

Note: Marginal effect and Z-statistics are reported. All errors are robust.
* Significant at 10%, ** Significant at 5%, *** Significant at 1%.

In summary, from a purely empirical perspective, there is a very similar relationship between contribution share and election outcome among Snyder's investors, diversifiers, ideologues and undiversified investors. Though Snyder's model of investor contribution predicts that investor contribution share should have a one to one relationship with a candidate's probability of winning, contributions patterns of any one of these four groups of contributors would yield a result similar to the prediction.

2.7 Campaign Contributions and Election Outcomes from a Chronological Perspective

The close relationship between candidate contribution share and winning likelihood raises the question of how early can one use a candidate's contribution share to forecast her probability of winning, and whether this relationship differs for money given by different types of contributors, namely – economic interest group, diversifiers, undiversified economic interest groups, non-economic interest groups. In the following section, we examine the relationship between contribution share and winning likelihood at earlier points of a race for the aforementioned contributors.

First, we are interested in whether there is a difference in the timing of contribution from the different types of interest groups. As Graphs 6 and 7 show, near 50% of all contribution are received in the last 12 weeks leading up to a race. Non-economic interest groups lag behind all the other three types of contributors in share of contribution received until the last 4 week before a race. In house races, while all the other three types of contributors raised 10% of their total race contribution by 48 weeks before election day, non-economic interest groups did not raise 10% of their total race contribution until 32 weeks before election day. A similar pattern is detected in Senate races.

Figure 6 Timing of Interest Group Contribution to House Race

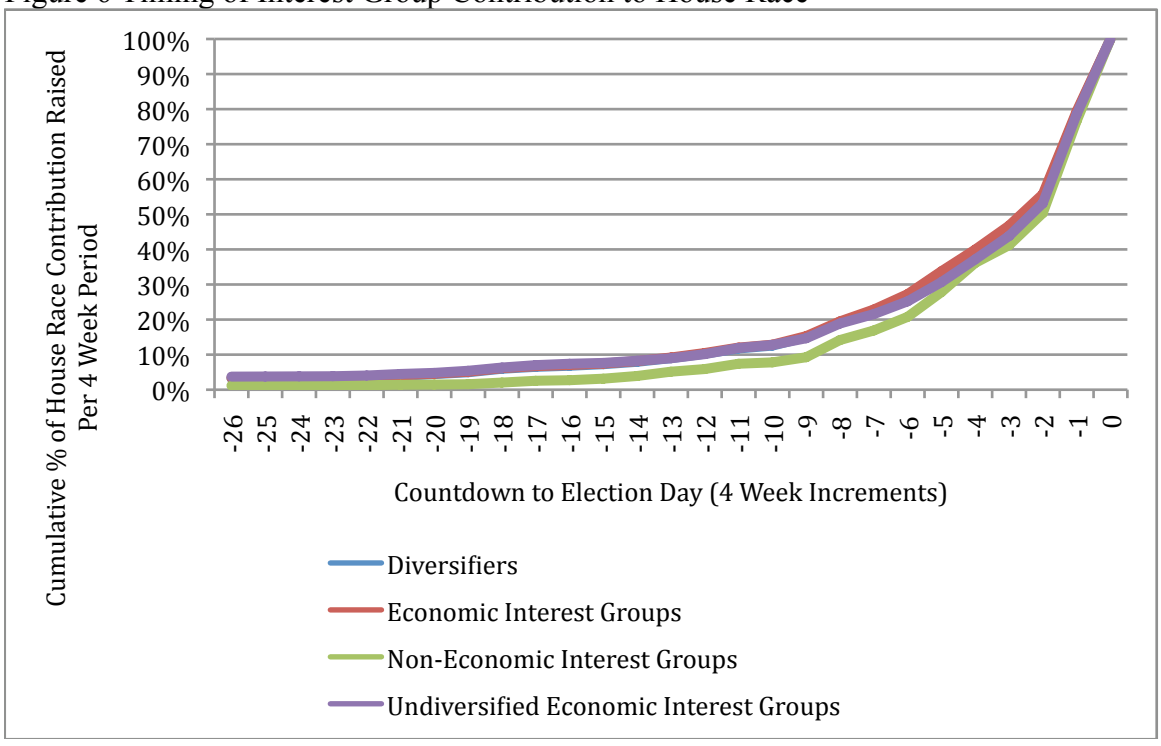
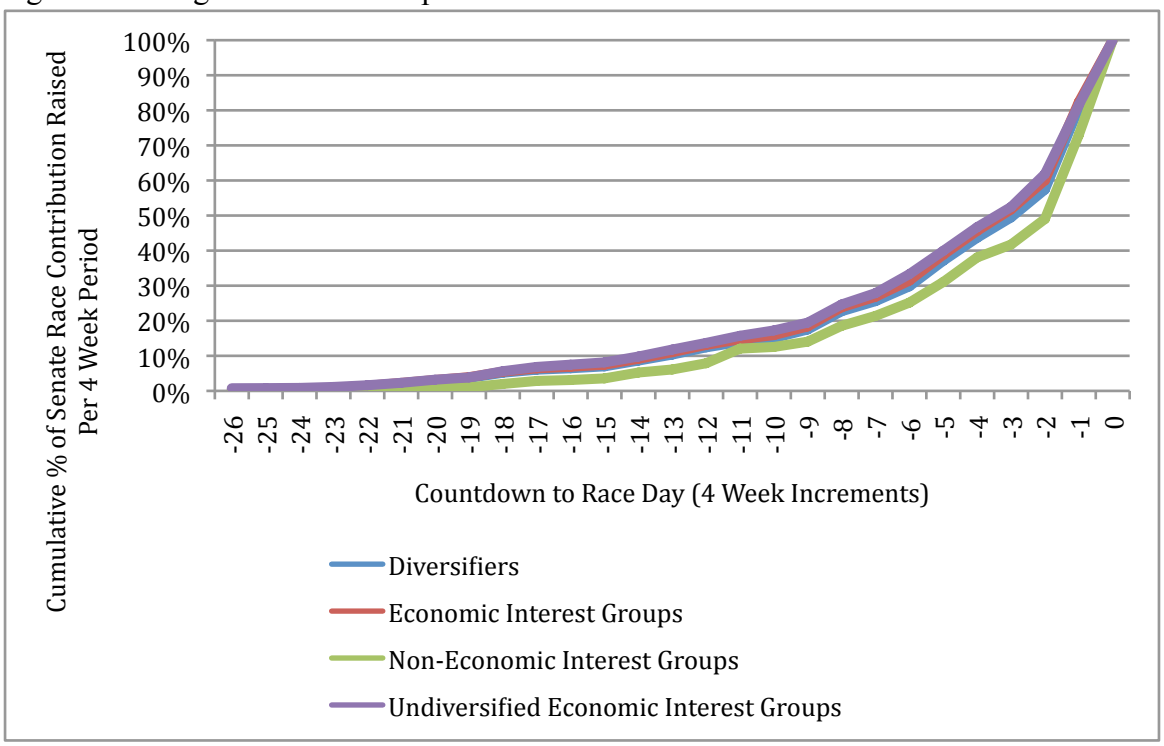


Figure 7 Timing of Interest Group Contribution to Senate Races



Next, we examine the relationship between contribution share and election outcomes at periods before election day. Since different states have different primary dates, and the competitiveness of races varies over time and races, we want to have a way to group and analyze races in similar stages. Instead of using weeks until election day, we use percent of race contribution received to date instead to capture the progression of a race. For example, if one district has a predominately democratic population, while the other is evenly divided between Democrats and Republicans, the former race is actually largely determined by the outcome in the Democratic primary while the latter is race outcome is not determined until election day. Using percent of total race contribution raised allows us to account for the varying competitive stages of different races in our analysis.

In Table 19.1, we look at the relationship between diversifier contribution share and election outcome when races have raise 10%, 20%, … 100% of total diversifier money. At 10% of total race contribution, a 1% increase in contribution share received to date is associated with a 0.55% increase in candidate's winning likelihood on average. At this stage, there is a small difference in the effect of contribution share for candidates that have 25%, 50%, and 75% of the total race diversifier contribution up until this point. The effect is largest for candidates with 50% of the race diversifier contribution to date, where 1% increase in contribution share is associated with a 0.83% increase in winning. As the race progresses, the correlation between contribution share and winning likelihood increase for all candidates. By the time a races raises 50% of its total diversifier money, on average, a 1% increase in contribution share is associated with a 0.70% increase in candidate's

winning likelihood. The magnitude of the relationship differs drastically for candidates who have 25%, 50% and 75% of the contribution share, where the coefficients are 0.95, 1.47, and 0.88, respective. All of them are significant with 99% confidence. After races raise 50% of their total diversifier contribution, the correlation between contribution share and winning likelihood stays relatively constant for candidates with 25% and 75% of the race diversifier contribution to date, but continues to increase for candidates who have 50% of the race contribution to date. By the time a race raises 100% of its total diversifier contribution, there is a 1.98 correlation between diversifier contribution share and race outcome among candidates who have 50% of the race diversifier contribution, while her counterparts who have 25% of 75% of the race diversifier contribution find a correlation of 0.79 and 0.83, respectively.

These results suggest that during the early stages of races, investor face significant uncertainty toward the winning likelihood of candidates in close races, and benefits significantly from incremental information gained toward these candidates as races progress. However, the winning likelihoods of candidates in lopsided races are determined early on in a race, and investor benefit little from incremental knowledge gained regarding candidates in lopsided races. In Table 19.2, we examine the relationship between economic interest group contribution share and winning likelihood and find very similar patterns.

In Table 19.3 and 19.4, we look at the relationship between group contribution share and election outcome for groups that we consider as ideologues – undiversified economic interest groups and non-economic interest groups. Surprisingly, there appears to be a similar improvement in the correlation between ideologue's contribution share and election outcome for candidates in close races. To better understand how these patterns relate to each other, we graph the average marginal effect of contribution share on election outcome by contributor type in Figure 8.

A very interesting pattern emerges in Figure 8. First, as expected, we find that the relationship between contribution share and election outcome strengthens over time at a constant pace for both diversifiers and economic interest groups. This pattern suggests that both diversifiers and economic interest groups recognize the risk associated with uncertainties in election outcomes at earlier stages of a race, and adjust their expected returns accordingly as races progress and more information about election outcome is revealed. We as result, there is an increasing correlation between contribution share and election outcome as races progress.

We find that the relationship between contribution share and election outcome among undiversified economic interest groups and non-economic interest groups are different from the investors. Among the latter two groups, the average marginal effect of group contribution share on election outcome is smaller than the investor groups when only 10% of race contribution have been raised, the effect grows quickly to a level exceeding those of diversifier and economic interest group when races raise 50% of their contribution.

Table 19.1 Effect of Contribution Share on Election Outcome Using Diversified Contribution at Earlier Stages of Races

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Avg marginal effect of Contrib share	0.55 (25.67)***	0.61 (29.85)***	0.64 (39.44)***	0.67 (45.30)***	0.70 (48.61)***	0.71 (48.08)***	0.74 (47.19)***	0.76 (40.35)***	0.77 (40.23)***	0.79 (38.80)***
Effect of Contrib share at 25%	0.73 (12.31)***	0.81 (13.15)***	0.88 (13.16)***	0.92 (12.17)***	0.95 (10.63)***	0.96 (9.85)***	0.94 (8.04)***	0.92 (7.17)***	0.91 (6.85)***	0.89 (6.56)***
Effect of Contrib share at 50%	0.83 (10.27)***	0.96 (10.90)***	1.14 (11.17)***	1.30 (11.14)***	1.47 (11.09)***	1.56 (10.90)***	1.75 (10.44)***	1.88 (10.18)***	1.93 (10.06)***	1.98 (9.92)***
Effect of Contrib share at 75%	0.69 (12.32)***	0.76 (13.06)***	0.83 (12.62)***	0.87 (11.44)***	0.88 (9.83)***	0.88 (9.10)***	0.87 (7.68)***	0.85 (6.89)***	0.84 (6.64)***	0.83 (6.41)***
N	392	392	392	392	392	392	392	392	392	392
Controls	Senate, Election Year, Party, State									

Note: Marginal effect and Z-statistics are reported. All errors are robust. * Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 19.2 Effect of Contribution Share on Election Outcome Using EIG Contribution at Earlier Stages of Races

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Avg marginal effect of Contrib share	0.57 (27.37)***	0.62 (31.07)***	0.65 (40.21)***	0.68 (48.00)***	0.70 (47.63)***	0.72 (47.57)***	0.74 (43.97)***	0.76 (40.88)***	0.78 (40.24)***	0.80 (38.73)***
Effect of Contrib share at 25%	0.76 (12.55)***	0.83 (13.31)***	0.89 (13.65)***	0.94 (12.88)***	0.97 (11.87)***	0.98 (10.78)***	0.99 (9.79)***	0.98 (8.60)***	0.95 (7.60)***	0.94 (7.39)***
Effect of Contrib share at 50%	0.86 (10.50)***	0.98 (11.02)***	1.10 (11.35)***	1.27 (11.32)***	1.40 (11.22)***	1.52 (11.06)***	1.63 (10.81)***	1.77 (10.54)***	1.89 (10.17)***	1.93 (10.13)***
Effect of Contrib share at 75%	0.69 (12.51)***	0.75 (13.03)***	0.80 (12.85)***	0.84 (11.77)***	0.86 (10.62)***	0.86 (9.49)***	0.85 (8.51)***	0.83 (7.38)***	0.82 (6.73)***	0.81 (6.54)***
N	387	387	387	387	387	387	387	387	387	387
Controls	Senate, Election Year, Party, State									

Note: Marginal effect and Z-statistics are reported. All errors are robust. * Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 19.3 Marginal Effect of Contribution Share on Election Outcome Using UEIG Contribution at Earlier Stages of Races

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Avg marginal effect of Contrib share	0.46 (12.40)***	0.52 (16.21)***	0.61 (23.84)***	0.67 (25.82)***	0.76 (30.23)***	0.80 (29.16)***	0.82 (28.36)***	0.83 (28.07)***	0.87 (25.68)***	0.89 (27.72)***
Effect of Contrib share at 25%	0.58 (8.39)***	0.68 (9.81)***	0.84 (11.99)***	0.91 (12.80)***	0.99 (11.93)***	1.00 (10.87)***	1.00 (9.70)***	1.00 (9.01)***	1.00 (8.88)***	0.92 (6.72)***
Effect of Contrib share at 50%	0.58 (7.89)***	0.71 (8.50***	0.94 (9.37)***	1.11 (9.79)***	1.39 (10.08)***	1.52 (9.92)***	1.66 (9.81)***	1.75 (9.74)***	1.80 (9.66)***	2.01 (9.27)***
Effect of Contrib share at 75%	0.49 (9.61)***	0.58 (10.40)***	0.70 (11.42)***	0.76 (11.40)***	0.81 (10.05)***	0.82 (9.17)***	0.80 (8.06)***	0.78 (7.45)***	0.77 (7.12)***	0.76 (6.04)***
N	355	355	355	355	355	355	355	355	355	355
Controls	Senate, Election Year, Party, State									

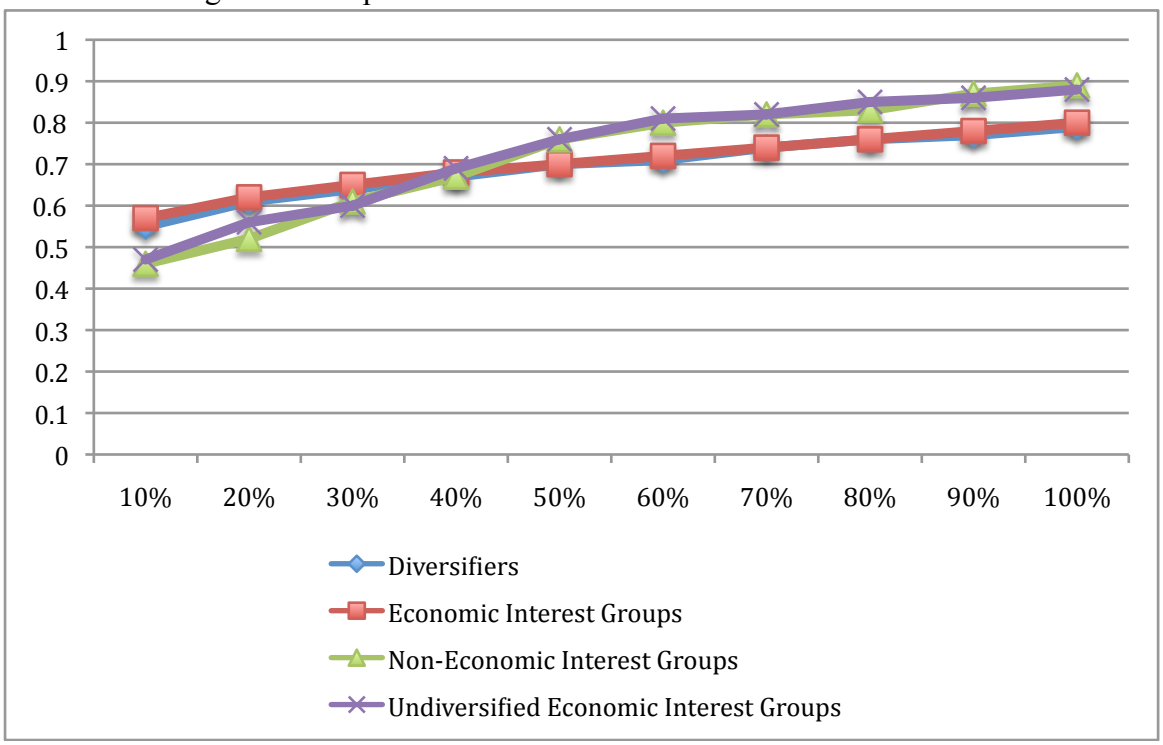
Note: Marginal effect and Z-statistics are reported. All errors are robust. * Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 19.4 Marginal Effect of Contribution Share on Election Outcome Using NEIG Contribution at Earlier Stages of Races

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Avg marginal effect of Contrib share	0.46 (12.40)***	0.52 (16.21)***	0.61 (23.84)***	0.67 (25.82)***	0.76 (30.23)***	0.80 (29.16)***	0.82 (28.36)***	0.83 (28.07)***	0.87 (25.68)***	0.89 (27.72)***
Effect of Contrib share at 25%	0.58 (8.39)***	0.68 (9.81)***	0.84 (11.99)***	0.91 (12.80)***	0.99 (11.93)***	1.00 (10.87)***	1.00 (9.70)***	1.00 (9.01)***	1.00 (8.88)***	0.92 (6.72)***
Effect of Contrib share at 50%	0.58 (7.89)***	0.71 (8.50***	0.94 (9.37)***	1.11 (9.79)***	1.39 (10.08)***	1.52 (9.92)***	1.66 (9.81)***	1.75 (9.74)***	1.80 (9.66)***	2.01 (9.27)***
Effect of Contrib share at 75%	0.49 (9.61)***	0.58 (10.40)***	0.70 (11.42)***	0.76 (11.40)***	0.81 (10.05)***	0.82 (9.17)***	0.80 (8.06)***	0.78 (7.45)***	0.77 (7.12)***	0.76 (6.04)***
N	355	355	355	355	355	355	355	355	355	355
Controls	Senate, Election Year, Party, State									

Note: Marginal effect and Z-statistics are reported. All errors are robust. * Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Figure 8. Comparison of Relationship between Group Contribution Share and Election Outcome Among Four Groups of Contributors



The results are puzzling in that it is hard to imagine why undiversified economic interest groups and non-economic interest groups may be able to benefit more from incremental information gained in each period leading up to a race than diversifiers and economic interest groups. One possible explanation of this difference is that the undiversified economic interest groups and non-economic interest groups want to contribute to influence election outcomes, and as race day approaches, they are contributing more to close races than their investor counterparts in order to help their favorite candidate win. Since the correlation between contribution share and winning likelihood is the strongest among candidates in close races, more contributions to candidates who have close to 50% of the race money to date yields a higher average marginal effect of contribution share.

2.8 Campaign Contributions and Election Outcomes In Contested Races

Since most of the effect of contribution share on election outcome is found among candidates who appear to be in contested races, in this section, we restrict our examination to this type of races only. We define a contested race by one where a candidate received 40-60% of the total votes. Using this sub-sample of candidates, we then look at the relationship between group contribution share and election outcome for diversifiers, economic interest groups, undiversified economic interest groups and non-economic interest groups at various points of congressional races.

As Table 20.1 shows, among candidates in races that have raised 10% of their diversifier money, we find that on average, a 1% increase in contribution share from diversifiers is associated with a 0.40% increase in winning likelihood. At this stage, there is no discernable difference in the marginal effect of contribution share for candidates with 25%, 50% or 75% of race contribution to date. As races progress, the marginal effect of contribution share on election outcome increase drastically. By the point races raise 50% of its total diversifier money, the average marginal effect of contribution share on race outcome has increased to 0.79. The marginal effect of contribution share for candidates with 25%, 50%, and 75% of the contribution share to date at this point stand at 0.85, 1.02, and 0.76, respectively. Between the point when races raises 50% to 100% of its group contribution, the marginal effect of contribution share on winning likelihood improves for all candidates in a race. When races have raised 100% of its diversifier contribution, the average marginal effect of contribution share reaches 0.96, where the marginal effects of contribution share for candidates with 25%, 50%, and 75% of the contribution to date are 0.96, 1.49, and 0.85, respectively. We find a similar pattern among economic interest groups.

Compared to the unrestricted sample, we find that in contested races, the average marginal effect of contribution share on election outcome is lower at early points of races and quickly overtakes the marginal effect of contribution share in the unrestricted sample of races by the time when races raise 40% of their race contribution. Interestingly, the increase in correlation between contribution share and election outcome is not restricted to candidates with 50% of the contribution, but is rather observed in candidates with 25% and 75% of the race contribution to date as well. In other words, while in the unrestricted sample, we observe that diversifier and economic interest groups are only able to significantly improve their ability to forecast election outcomes for candidates who have close to 50% of the contribution to date, these same interest groups are able to significantly improve their ability at forecasting the outcome of all candidates in contested races.

We perform a similar analysis using contribution from economic interest groups, undiversified economic interest groups and non-economic interest groups. The results are reported in Tables 20.2, 20.3, and 20.4. To understand these results in the context of each other, we again graph the average marginal effects in Figure 9.

Table 20.1 Marginal Effect of Contribution Share on Election Outcome Using Diversifier Contribution in Contested Races

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Avg marginal effect of Contrib share	0.40 (5.15)***	0.49 (5.71)***	0.58 (7.12)***	0.68 (8.66)***	0.79 (10.78)***	0.84 (10.95)***	0.91 (11.46)***	0.99 (12.09)***	1.01 (12.22)***	1.05 (11.62)***
Effect of Contrib share at 25%	0.44 (4.53)***	0.52 (5.10)***	0.63 (6.19)***	0.74 (7.35)***	0.85 (8.84)***	0.89 (9.27)***	0.93 (9.74)***	0.96 (9.69)***	0.96 (9.57)***	0.96 (9.43)***
Effect of Contrib share at 50%	0.44 (4.24)***	0.54 (4.61)***	0.67 (5.26)***	0.82 (5.74)***	1.02 (6.25)***	1.11 (6.26)***	1.24 (6.31)***	1.39 (6.42)***	1.44 (6.42)***	1.49 (6.31)***
Effect of Contrib share at 75%	0.41 (4.73)***	0.48 (5.33)***	0.58 (6.43)***	0.67 (7.53)***	0.76 (8.73)***	0.79 (8.99)***	0.82 (9.11)***	0.84 (8.79)***	0.84 (8.63)***	0.85 (8.51)***
N	193	193	193	193	193	193	193	193	193	193
Controls	Senate, Election Year, Party, State									

Note: Marginal effect and Z-statistics are reported. All errors are robust. * Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 20.2 Marginal Effect of Contribution Share on Election Outcome Using EIG Contribution in Contested Races

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Avg marginal effect of Contrib share	0.42 (5.43)***	0.51 (6.01)***	0.61 (7.36)***	0.71 (9.16)***	0.80 (10.53)***	0.87 (11.18)***	0.94 (11.84)***	1.01 (12.53)***	1.04 (12.58)***	1.08 (12.26)***
Effect of Contrib share at 25%	0.46 (4.73)***	0.55 (5.33)***	0.65 (6.41)***	0.77 (7.77)***	0.86 (8.90)***	0.90 (9.49)***	0.95 (9.82)***	0.97 (9.45)***	0.97 (9.24)***	0.96 (8.85)***
Effect of Contrib share at 50%	0.47 (4.38)***	0.57 (4.75)***	0.70 (5.36)***	0.87 (5.91)***	1.03 (6.19)***	1.15 (6.29)***	1.31 (6.36)***	1.46 (6.42)***	1.51 (6.43)***	1.58 (6.36)***
Effect of Contrib share at 75%	0.43 (4.95)***	0.51 (5.57)***	0.60 (6.65)***	0.70 (7.91)***	0.76 (8.78)***	0.80 (9.10)***	0.83 (9.03)***	0.84 (8.46)***	0.84 (8.26)***	0.84 (7.94)***
N	193	193	193	193	193	193	193	193	193	193
Controls	Senate, Election Year, Party, State									

Note: Marginal effect and Z-statistics are reported. All errors are robust. * Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 20.3 Marginal Effect of Contribution Share on Election Outcome Using UEIG Contribution in Contested Races

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Avg marginal effect of Contrib share	0.35 (4.57)***	0.35 (3.79)***	0.53 (6.00)***	0.61 (6.59)***	0.81 (9.71)***	0.89 (10.26)***	1.00 (11.49)***	1.06 (12.63)***	1.10 (12.09)***	1.16 (11.77)***
Effect of Contrib share at 25%	0.39 (3.95)***	0.37 (3.46)***	0.58 (5.26)***	0.67 (5.93)***	0.87 (8.68)***	0.92 (9.41)***	0.96 (9.41)***	0.97 (8.58)***	0.97 (8.22)***	0.95 (7.44)***
Effect of Contrib share at 50%	0.39 (3.83)***	0.37 (3.32)***	0.61 (4.58)***	0.72 (4.87)***	1.06 (5.88)***	1.20 (5.98)***	1.43 (6.17)***	1.59 (6.30)***	1.66 (6.26)***	1.76 (6.17)***
Effect of Contrib share at 75%	0.36 (4.27)***	0.35 (3.64)***	0.53 (5.54)***	0.60 (6.22)***	0.76 (8.55)***	0.80 (8.87)***	0.83 (8.43)***	0.83 (7.61)***	0.82 (7.25)***	0.82 (6.79)***
N	189	189	189	189	189	189	189	189	189	189
Controls	Senate, Election Year, Party, State									

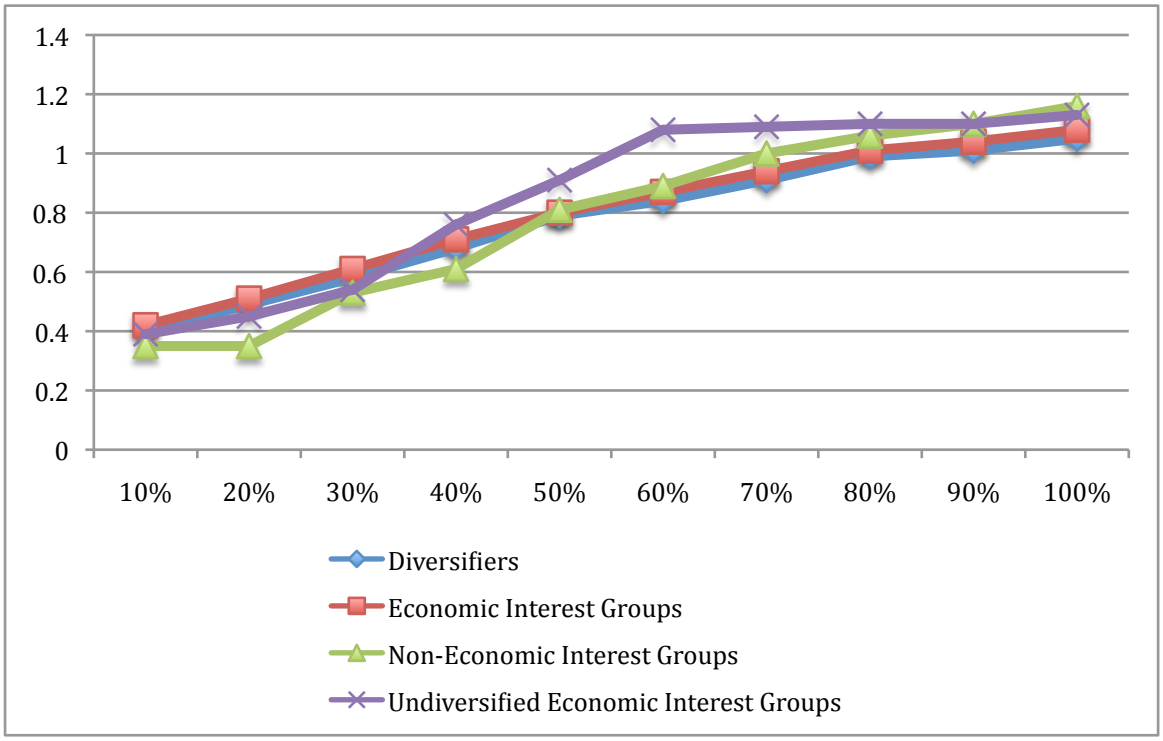
Note: Marginal effect and Z-statistics are reported. All errors are robust. * Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 20.4 Marginal Effect of Contribution Share on Election Outcome Using NEIG Contribution in Contested Races

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Avg marginal effect of Contrib share	0.39 (5.21)***	0.45 (4.91)***	0.54 (5.35)***	0.76 (6.99)***	0.91 (7.56)***	1.08 (8.38)***	1.09 (8.51)***	1.10 (8.13)***	1.10 (8.13)***	1.13 (8.30)***
Effect of Contrib share at 25%	0.44 (4.44)**	0.49 (4.38)***	0.58 (4.97)***	0.79 (7.26)***	0.89 (8.87)***	0.96 (10.22)***	0.97 (10.23)***	0.97 (10.22)***	0.97 (10.18)***	0.95 (9.98)***
Effect of Contrib share at 50%	0.44 (4.19)***	0.50 (0.45)***	0.61 (4.34)***	0.90 (5.39)***	1.11 (5.93)***	1.33 (6.71)***	1.35 (6.79)***	1.35 (6.62)***	1.37 (6.35)***	1.44 (6.22)***
Effect of Contrib share at 75%	0.41 (4.71)***	0.45 (4.67)***	0.53 (5.31)***	0.70 (7.57)***	0.78 (8.86)***	0.84 (9.46)***	0.84 (9.40)***	0.84 (9.42)***	0.84 (9.41)***	0.85 (9.21)***
N	187	187	187	187	187	187	187	187	187	187
Controls	Senate, Election Year, Party, State									

Note: Marginal effect and Z-statistics are reported. All errors are robust. * Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Figure 9. Comparison of Relationship between Group Contribution Share and Election Outcome Among Four Groups of Contributors – Contested Races Only



Like the unrestricted sample of races, we find that diversifiers and economic interest groups behave very similarly in that there is an almost linear improvement over time in the correlation between contribution share and election outcome. Undiversified economic interest groups and non-economic interest groups are worse than diversifiers and economic interest groups at forecasting election outcomes at early stages of races. As races progress, there is a noticeable S-shaped change in the correlation between contribution share and election outcome for undiversified economic interest groups and non-economic interest groups. The S-curve appears more pronounced for non-economic interest groups than undiversified economic interest groups.

2.9 Tests Using 2008 Congressional Results

Emergence of political betting markets such as Intrade and the Iowa Electronic Market shows that under certain settings, patterns in the political betting market can be used to understand the equilibrium expectation of race outcomes. However, most of such formalized political betting markets have so far only focused on elections and issues that have received sufficient media coverage. The contribution behavior of investor contributors can be in some ways thought of as a similar form of political betting behavior: investor interest group contribute in exchange for favor while taking on the risk that candidates they give money to may not win their respective elections. We test whether political contribution patterns can be used to predict a candidate's winning likelihood using

contribution data to candidates in open race in 2008. We divide candidates into two groups by whether they received less than 50% or more than 50% of the investor contribution to date, and examine the percentage of candidates in each group who eventually win their respective races.

As Table 21 shows, among candidates with less than 50% of diversifier contribution, 23-27% of candidates go on to win their respective races. Among candidates with 50% or more of the diversifier contribution, 74-79% of candidates go on to win their respective races. These patterns remain the same as early as when races have only 10% of their total contribution.

Table 21. Average 2008 Wins by Share of Contribution to Date

Race Contribution To Date	Average Wins Among Candidates with Less Than 50% of Race Contribution to Date	Average Wins Among Candidates with 50% or more of Race Contribution to Date
10%	0.26 (0.08)	0.79 (0.08)
20%	0.27 (0.08)	0.77 (0.08)
30%	0.24 (0.08)	0.77 (0.08)
40%	0.28 (0.08)	0.77 (0.08)
50%	0.23 (0.08)	0.74 (0.08)
60%	0.23 (0.08)	0.80 (0.07)
70%	0.23 (0.08)	0.80 (0.07)
80%	0.23 (0.08)	0.80 (0.07)
90%	0.23 (0.08)	0.80 (0.07)
100%	0.23 (0.08)	0.77 (0.08)

Note: Means and standard error of means are reported.

2.10 Discussion and Conclusion

In this paper, we explore an alternative empirical strategy to identify investor contributors. We postulate that since ideological contributors give to help their favorite candidate win, an ideological contributor would under no circumstance give to competing parties in a single race, while investor contributors are not obliged to do so. This difference allows us to separate contributors into two groups: undiversified contributors who have never given to multiple parties in one race, and diversified contributors who have at some point given

to multiple parties in one race. We find that diversifiers are few in number but are responsible for most of the contribution given by interest groups. Compared to Snyder's definition of investor contributors, which we call economic interest groups, diversifiers are for the most part a subset of economic interest groups, they constitute less than 50% of the former in number, but over 90% of the former in dollars given. This difference suggests that the diversifiers are the true market makers in the campaign contribution process.

Using both definitions of investor contributors, we find that there is a close to one relationship in a candidates' share of investor contribution and probability of winning. The relationship is weaker for candidates with 25% of 75% of the contribution, and is much stronger for candidates with 50% of the contribution.

Using percent of race contribution raised to date as a proxy for the progress of races, we find that as early as when races have only 10% of its eventual money raised, there is a significant albeit smaller relationship between investor contribution share and election outcome. As races progress, the average relationship between contribution share and winning outcome strengthens, where the improvement is largest among candidates with close to 50% of the race contribution. The change in correlation as races progress indicates that information and uncertainty plays an important part in how investors think about campaign contribution. One possible explanation is that in early stages of a race, where there is considerable risk associated with the winning likelihood of a candidate, the lower risk adjusted return to contributions made by investor candidates leads to a lower correlation between contribution share and election outcome.

We are also interested in the contribution patterns of two groups of ideological interest groups. The first is group are consisted of undiversified economic interest groups, who are investors by Snyder's definition and ideologues by the diversifier definitions. The second group is consisted of non-economic interest groups, who are ideologues by Snyder's definition. We investigate whether the contribution patterns of these two types of interest groups differ from diversifiers and economic interest groups.

First, we find that the relationship between contribution share and election outcome among money given by these two groups resemble the one that we find among investor contributors. Second, we find that when examining the relationship between contribution share and election outcome at earlier points of races, the two ideological groups are worse at "forecasting" the outcome of races in early stages of a race, but overtakes the investor contributors at later stages of races. We believe that this may be caused by the different motives that investors and ideologues have to contribute: ideological contributor give to help their favorite candidates win, therefore at later stages of races, they give more to candidates in close races. Assuming that there is a close relationship between contribution share and a candidate's probability of winning, the candidates in close races are the same candidates who have close to 50% of the contribution share and reside in the steepest part of the S-shaped marginal effect curve. A theoretical model would be very helpful at distinguishing the drivers of these interesting differences.

The advent of political betting markets such as Intrade and the Iowa Electronic Market illustrates that in some settings, political outcomes can be predicted with some accuracy long before elections take place. However, the lack of adequate trading limits the extent that one can use these formal political betting markets to forecast political outcomes. We believe that the contribution for favor market can be viewed in some way as an informal political betting market, where at points before race day, interest groups take into consideration risks associated with election outcomes, and invest in candidates with some expected return should their candidates win. We test this theory using election results from 2008 and find that as early as when races have only 10% of its total contribution, 26% of candidates with less than 50% of contribution to date win their respective races, while 79% of candidates with 50% of contribution to date win their respective races. In other words, contribution patterns can be used to forecast election outcomes to some extent.

3 Chapter 3: Buy, Lobby Or Sue: Interest Group Participation in Policy Making – A Selective Survey

3.1 Introduction

The participation of interest groups in public policy making is unavoidable. No society can be so repressive nor individual power be so extreme that decisions are undertaken by a narrow clique of individuals without consideration to others. Its inevitable nature is only matched by the universal suspicion with which it has been seen by both policy makers and the public. Recently, however, there has been a growing literature that examines the participation of interest groups in public policy making from a New Institutional Economics perspective. The distinguishing feature of the New Institutional Economics Approach, as it is understood today, is its emphasis on opening up the black box of decision-making in, among others, understanding the rules of the game and the play of the game. Indeed, as Oliver Williamson says,

> *"The NIE has progressed not by advancing an overarching theory but by uncovering and explicating the microanalytic features [of institutions] to which Arrow refers and by piling block upon block until the cumulative value added cannot be denied."*[22]

Thus, in this paper we do not attempt to fairly describe the vast literature on interest group's behavior. Instead, we mostly review recent papers that follow Williamson's NIE *mantra*. That is, they attempt to explicate the *micro-analytic* features of the way interest

[22] See Williamson (2000).

groups actually interact with policy-makers, rather than providing an abstract high-level representation.[23]

We start this survey by emphasizing that to understand the role of interest groups in the modern administrative state, it is fundamental to recognize that while legislatures enact statutes, and often supervise their implementation, it is bureaucracies that, via the administrative process, make and implement the bulk of policies. Consider, for example, telecommunications in the United States. For more than sixty years the main body of telecommunications legislation in the United States was the Federal Communications Act (FCA) of 1934.[24] This piece of legislation specifically directed the newly created Federal Communications Commission to regulate interstate communications so as to provide telecommunications services at "just, fair and reasonable prices." Nowhere in the Act were there specific instructions about how to obtain that general goal. Furthermore, the Act presumed the existence of a monopoly supplier of long distance services. The fostering of competition was not one of the stated goals of the Act. Even though the FCA was silent about competition, from the late 1950s until the Telecommunications Act of 1996, the FCC was engaged in a process of partially deregulating the long distance and the customer provided equipment segments of the industry, which culminated with the passing of the 1996 Telecommunications Act. This process was partially triggered by various interest group actions, which included introduction of multiple pieces of legislation, continuous lobbying of congress and the agency, and, naturally, suing for policy changes in courts.[25]

Indeed, the potentially large distributional effects of legislation provide the affected groups strong incentives to attempt to control what policies are made and how they are enforced. Thus, much of interest group action in the modern administrative state is geared toward influencing the implementation of, often vague, policies.

In this paper we first discuss the role of interest groups in the policy making process, and then explore how it is affected by the nature of the institutional environments in which interest groups operate.

3.2 Buy, Lobby or Sue

The literature normally relates to the activities of interest groups generically as "lobbying," where by this it refers to actions such as transferring resources - normally in the form of campaign contributions, but also in the form of bribes or information to policy makers.

[23] An earlier wave of new institutional analysis of interest groups was led by Mancur Olson's path breaking 1971 *The Logic of Collective Action*. His analysis of the organization of, and individual incentives to join groups, led to a large literature on the formation and organization of interest groups. See, for example, Moe (1980) and references therein.

[24] 47 U.S.C. 151 (1934).

[25] For a more detailed analysis of the role played by interest groups in the opening of the telecommunications market in the US, see Spiller (1996b).

The latter, however, are drastically different actions. In this survey we will not follow the usual definition of lobbying as the quintessential interest group activity. Instead we look at three main ways by which interest groups may sway policy outcomes their preferred way: buying influence, lobbying for influence, and suing for influence. Buying influence reflects the actions, often legal and sometimes illegal, by which interest groups may attempt to get decision makers (whether politicians or bureaucrats) to listen to their needs, and, hopefully, act accordingly. Lobbying for influence consists of the various actions, also often legal, and sometimes illegal, by which interest groups attempt to transfer information to politicians and bureaucrats about issues (such as voters' preferences, impact of particular agency or legislative proposals, etc) that may affect decision makers' political and bureaucratic calculus. Suing for influence is the art of using the judicial process to change the arena where the game is played, away from the legislative and administrative process, towards the judicial process. Judicial action may be pursued against a particular policy or its implementation depending on the nature of the case and more importantly, the general environment in which the interest group operates.[26]

3.2.1 Direct and Indirect Influences

Buying, lobbying and suing can take both direct and indirect forms. Interest groups pursue a direct action when the target of their action is intended to act directly on the matter, and pursue an indirect action when the target is expected to be persuaded into using their power to influence the actions of another party. For example, interest groups may lobby legislators with the specific intent of changing their votes on particular bills; or may lobby legislators with the intent that the legislators use the information to exert their authority to influence the way a particular agency implements a statute. Similarly, interest groups may make direct monetary contributions to legislators' campaigns so as to obtaining favorable votes on specific pieces of legislation, or to obtain their influence over actions of the bureaucracy. The dichotomy between direct and indirect influence is less apparent for interest groups' suing activities. The purpose of suing is to shift the arena of the game away from the legislative/bureaucratic arena, towards the judicial arena, expecting to get via litigation what the interest group was unable to obtain via other strategies. In this context, litigation may be used both in a direct or indirect fashion. Direct suing attempts to reverse a particular bureaucratic or legislative action, while indirect suing may attempt to put the government – i.e., a regulatory agency – on notice that pursuing particular policies would be extremely expensive.[27]

[26] Some countries do not provide for a blanket declaration of lack of constitutionality of a statute, requiring instead its prior application (i.e., an agency decision) to a particular case.

[27] The strategies of telecommunication entrants, such as MCI and others, to fight the FCC to open the telecommunications market can be understood in this setting. Indeed, Temin (1987) points to MCI's multiple law suits against the FCC as the triggering factor that increased the hostility of the Justice Department against AT&T, and helped motivate it to pursue AT&T's eventual break-up.

3.2.2 Buying

Legislator-buying is the most publicized form of interest group influence, and the one that has attracted the most attention by scholars and pundits alike.[28]

3.2.2.1 Buying Direct Influence

The classical interest group literature focuses on direct vote buying. Scholars model this interaction as a game where interest groups compete with each other to capture legislators by making contributions (to campaigns, or illegally, for profit) in return for politicians' votes.[29] Empirical evidence on the pay-for-vote interaction between interest groups and legislators is at best inconclusive. Stratmann (1998) studies time patterns in PAC contributions and finds that changes in PAC contributions are correlated with the voting schedule on relevant policies, independent of the electoral cycle. The extent to which direct vote buying by interest groups actually takes place, however, is unclear. Indeed, more than thirty years ago, Gordon Tullock asked the fundamental question of why there is so little money going to US policy makers (1972). Ansolabehere, De Figueiredo and Snyder (2003), investigating the size and makeup of political contributions, and their effect on politicians' behavior, find that, considering the effect of policies on interest groups' welfare, these groups give far less than they should, and furthermore, that contributions have little effect on politicians' behavior.[30] These findings contradict the classic perception that contributions are made mainly to influence politicians' voting behaviors. An alternative explanation for campaign contributions is that they are made as a source of ideological consumption. Bronas and Lott, Jr. (1997) find that politicians in their last term do not alter their voting behavior significantly compared to their preceding term, indicating that interest groups contribute to politicians who are more aligned with their political views, rather than buying votes, a view consistent with campaign contributions being more a consumption than an investment activity.[31] Finally, campaign contributions could be the key to gain access to legislators.[32] Indeed, Ansolabehere, Snyder and Tripathi (2002) find a strong connection between buying (campaign contributions) and lobbying, suggesting that campaign contributions may indeed be used to gain and maintain access.

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[28] Even US President Theodore Roosevelt saw the need in 1906 to coin the term "muckrakers" to refer to those journalists who questioned the influence of business in policy making. See The Columbia Encyclopedia, Sixth Edition, 2001-05, available at http://www.bartleby.com/65/mu/muckrake.html.

[29] Among the classical buying legislators' papers, Denzau and Munger (1986), Snyder (1990, 1991)), and Baron (1994) model the effects of tailored contribution schedules to individual legislators on voting outcomes. Dal Bó (2007) extends the analysis by investigating the effect of general contribution offers to ideologically uniform voters on voting outcomes.

[30] One could argue that legislators (and the president) buy each others' votes via pork-barrel legislation. Although the practice is well studied (for a recent application to Brazil, see Alston and Mueller 2006), we do not deal with pork-barrel issues here.

[31] One could always spin a reciprocity theory whereby interest groups may compensate legislators with post legislative employment, increasing thus the potential for interest alignment even on legislators' last terms. For a recent survey of theories of capture by interest groups, see Dal Bó (2006).

[32] Since the probability that a small contribution will impact on the probability of the legislator's reelection is small, the net gains from the contribution could well be negative.

3.2.2.2 Buying Indirect Influence

The "Congressional Dominance" and the "Separation of Powers" hypotheses suggest that the power of the legislature is not limited to the immediate effects of their voting outcomes, but extends to its ability to credibly threaten agencies with legislative action (such as a Congressional reversal) if administrative outcomes deviate sufficiently from legislative preferences. The wide span of congressional power provides an additional venue for interest groups to control policy outcomes – through buying legislators' influence on bureaucrats and courts. A central element of the *Congressional Dominance Hypothesis* is that formally independent agencies are not truly independent, as they are subject to continual – although not necessarily proactive - congressional oversight.[33] Thus, interest groups may also attempt to control policy outcomes through buying legislators' influence on bureaucrats or courts. Gely and Spiller (1992) show that the discretion of independent administrative agencies in a system of division of powers depends, among other things, on the composition of the legislature and the executive (i.e., on their internal cohesiveness and relative stance on particular issues determine the threat of congressional reversal).[34] In a system of division of powers, however, full Congressional Dominance is a corner solution and requires a particular type of political composition of the legislature and the executive. Spiller (1990), for example, examines Congressional budgetary decisions concerning regulatory agencies and show that they reflect an internal, rather than a corner solution. Thus, in political environments with divided governments, agencies do not always, nor fully, respond to Congressional desires. As a result, buying indirect influence may not always be an efficient or effective strategy for interest groups.

There is some recent evidence of buying indirect influence. De Figueiredo and Edwards (2004) find that telecommunications policy decisions by state regulatory commissions (in particular, interconnection charges) are closely aligned with campaign contributions to key legislators by both incumbents and new entrants. Indirect buying provides then, a third explanation to the scant evidence concerning the link between campaign contributions and observable policy outcomes.

3.2.3 Lobbying

An alternative way for interest groups to exert influence is to provide legislators with valuable information. The purpose of this information is to potentially alter legislators' support for a particular policy.[35] We call the transfer of information lobbying.[36] Interest

[33] Weingast and Moran (1983), McCubbins and Schwartz (1984), Barker and Ricker (1982), and Fiorina (1982), among others, deal with various forms of oversight employed by the Congress. We focus here on the incentives for buying legislators so as to achieve such influence.

[34] The organization and budget of the judiciary (determining the threat of judicial reversal) is also of relevance (Spiller 1992).

[35] Support may depend on the legislator's perception of his/her constituency's preferences over the policy, or of his/her own believes about the public good.

[36] In principle, conditional campaign or in general monetary contributions may also change legislators' perspectives about particular policies. We focus here, though, on information concerning states of the world, rather than on interest group actions.

groups may transfer information to legislators and other decision makers in various ways. Interest groups may, for example, participate in hearings, may directly provide background documentation, or organize protests. To be of value, these costly actions must transfer relevant information to decision makers, whether legislators, bureaucrats or judges. The information may concern the value, cost and distributional implication of a particular policy to the legislators' constituents, the saliency of the issue to the interest group's constituency, or the implication of alternative technologies or policy implementation. [37] The information transfer can be done following formal procedures, such as participating in congressional hearings and directly lobbying agency staff, or via informal means, such participating in protests or demonstrations. As influence buying, lobbying for influence may be direct or indirect.

3.2.3.1 Lobbying for Direct Influence

An interest group providing information about the consequences of a particular bill is attempting to get legislators to pay attention to that information when voting on the bill.[38] Scholars in recent years have given much attention to the informal and formal rules by which interest groups engage in information lobbying, where the target of influence is usually presumed to be policy outcomes. A key issue in lobbying is the inherent bias in the information transmission process. Interest groups will only provide information when it is in their advantage to do so. Calvert (1985) shows,[39] however, that even biased information may be preferred to no information. From legislators' perspective, because politicians cannot eliminate informational bias if information arises from a single interested group,[40] legislators will benefit from facilitating access to multiple interests, even from those whose desired policy outcomes are not aligned with their own (Austen Smith and Wright 1992, 1994; Epstein and O'Halloran 1995; DeFigueiredo, Spiller and Urbiztondo 1999). From the interest groups' perspective, DeFigueiredo, Spiller and Urbiztondo (1999) show that, under some conditions, open participation by multiple interest groups cancels the information advantage each interest group may have vis-à-vis the politicians.

3.2.3.2 Lobbying for Indirect Influence

As it concerns lobbying for indirect influence, the information to be transmitted may be about constituents' interests or about agencies or courts' potential decisions. The interest group transmits the information with the expectation that the agency or court, knowing that

[37] The March 2006 students' demonstrations in France represent one excellent example of transferring information to politicians about voters' preferences concerning flexible labor policies.
[38] DeFigueiredo and Silverman (2002) show large returns to universities from (direct) lobbying with a senator in the Senate Appropriations Committee, while the returns from lobbying to universities without a senator in the SAC is nil.
[39] See also Lupia and McCubbins (1994).
[40] See, Calvert (1985), DeFigueiredo, Spiller and Urbiztondo (1999).

such lobbying is taking place, and that it will affect legislators' reaction to the proposed decision, will adjust the proposed decision accordingly.

Indeed, apart from the direct monetary advantages that legislators may obtain from interest groups participation,[41] legislators may value interest groups participation in the administrative process because of their informational advantage. Since policy outcomes can also affect re-election probabilities, or more generally, a politician's career advancement, legislators have incentives to provide interest groups with access both to the regulatory process, and to themselves. This is the essence of the "fire alarm" theory of congressional oversight (McCubbins and Schwartz 1984), whereby congressional supervision is triggered by interest groups detection of bureaucratic "misbehavior."[42] As agency delegation is the natural consequence of increased policy complexity, legislators find it increasingly difficult to supervise the growing bureaucracies. One way to solve the supervision problem is to create intermediary monitors, thereby increasing the bureaucratic hierarchy.[43] However, as De Figueiredo, Spiller and Urbiztondo (1999) point out, interest groups have an important advantage over supervising bureaucracies in gathering information. Since interest groups' constituents are directly impacted by policies, they are naturally motivated to garner policy relevant information. While supervising bureaucracies require budgets and have to be motivated to undertake the extra effort, interest groups' research and monitoring activities are done for their own purpose, and, in general, do not require congressional funding, releasing congressional budgets for other purposes. This is the essence of the "fire alarm" strategy. Hojnacki and Kimball (1998) find that all else being equal, interest groups are more likely to lobby friends than undecided or opposing legislators in committee. The results are consistent with the theory that interest groups often lobby not to change the minds of legislators, but to provide friendly legislators with valuable information to be used to influence other legislators or bureaucrats. On the other hand, as mentioned above, interest groups are biased, while supervising bureaucracies may be less so. As with direct lobbying, promoting multiple interest groups participation, including those in opposition to the politician, makes politicians strictly better off, as competing interest groups provide the greatest amount of information at the lowest cost to the elected official. DeFigueiredo, Spiller and Urbiztondo (1999) use this insight to explain the enactment by the US Congress in 1946 of the

[41] It can be argued that by allowing interest group participation in the administrative process, legislators may have increased their usefulness to interest groups, thus, increasing the amount interest groups will pay for access. See also Spiller (1990) for a revolving door theory of interest group influence where politicians benefit from interest group influence on bureaucratic decision making.

[42] McCubbins, Noll and Weingast (1987) view administrative procedures in that fashion. In their view, administrative procedures guide bureaucracies to make decisions consistent with the preferences of the enacting coalition.

[43] The creation of a specific organ of the legislature whose purpose is to supervise the actions of the bureaucracy (such as the US General Accounting Office) is one such strategy. The problem remains, though, of who monitors the monitor. For a discussion of hierarchy as an organizational response to information problems, see Garicano (2000).

Administrative Procedure Act that increased interest group participation in public policy making.[44]

The Administrative Procedure Act,[45] as well as most of the enabling legislation of regulatory agencies, set procedural requirements that provide for increased interest group participation in the regulatory process. These procedural requirements stipulate that regulatory agencies must provide notice, must inform the public about proposed rule makings, must make their decisions taking into account the submissions of interested parties, and cannot rush nor make decisions in the dark. In this setting, interest groups serve two important roles: first, they provide information to the regulatory agency about the state of the world; and second, they provide information to legislators' about their constituents' preferences. Both are important for the agency and its political masters. On the one hand, agencies are resource constrained and hence information about the state of the world is always beneficial. On the other hand, information about interest groups' preferences is important as it allows the agency to forecast potential political problems they may encounter at the legislature. The procedural restrictions on decision making also provide the opportunity for interest groups to attempt to thwart potentially harmful agency actions by lobbying for legislative intervention - McCubbins and Schwartz' (1984) "fire alarm" insight. Interest group participation allows legislators to supervise the agency without having to be actively involved in the regulatory process, and hence limits the time that legislators have to expend in regulating regulators.[46] However, the information revealed through individual interest group's lobbying activities, even if truthful, is naturally biased. Interest groups will not reveal information that will bring about a regulatory outcome that makes them worse off. APA's widespread facilitation of interest group participation ameliorates the bias in information provided by each interest group.

Transferring information about constituents' interests also provides an indirect link between lobbying and policy decisions, whether by agencies or courts. Under the *Separation of Powers Hypothesis*, courts, understanding that judicial rulings disfavored by a sufficiently cohesive legislature may be overruled by legislative action,[47] would select policies only among those that are immune to legislative reversal. By changing legislators' perceptions of their constituencies' preferences, lobbying may indirectly change the set of judicial policies that are immune to legislative override. Indeed, Iaryczower, Spiller and

[44] McCubbins, Noll and Weingast (1987) present a slightly different view. They see the organization of administrative procedures, in general and as applied to particular agencies, as ways to hard-wire and protect the interests of the enacting coalitions, while DeFigueiredo, Spiller and Urbiztondo (1999) focus more on the generic informational benefit to incumbent legislators.

[45] 5 USC §§ 551-59, 701-06, 1305, 3105, 3344, 5372, 7521.

[46] McCubbins, Noll and Weingast (1989) apply the same "autopilot" explanation to the function of the APA as a safeguard for the enacting coalitions' interest. By including interest group participation in agencies' procedure and structure, agencies will change automatically in response to changes in the enfranchised interest groups' preferences, freeing the legislators from the need to intervene.

[47] For evidence on congressional override, see Eskridge (1991).

Tommasi (2006) find that interest groups lobby more when the courts are more constrained by the legislature.[48]

In sum, the reason why the literature looking for a connection between lobbying or campaign contributions and policy outcomes have failed to provide a direct connection between lobbying and campaign contributions and policy outcomes is that they may have essentially been looking at the wrong place. As Iaryczower, Spiller and Tommasi (2006) emphasize, "the empirical work on the impact of lobbying has been looking at the wrong policy dimension." Rather than considering the impact on the nature of legislation, empirical research should focus on the way the administered state operates, that is, via bureaucracies and the courts. In this sense, buying or lobbying for indirect influence ought to imply a stronger correlation between campaign contributions and lobbying to legislators and bureaucratic or judicial outcomes.

3.2.4 Suing

When buying and lobbying are inefficient or ineffective, the judicial process may still provide satisfaction. Interest groups may employ litigation as means to obtain what they could not obtain via buying or lobbying alone, such as the reversal of an adverse regulatory decision.

3.2.4.1 Suing for Direct Influence

Litigation has been a major form interest groups have of influencing public policy. In the regulatory arena, issues as diverse as nuclear power and telecommunications have been fundamentally impacted by litigation.[49] Interest groups' use of the judicial process, however, differs substantially across issues, indicating that interest groups differ in their expected returns from pursuing particular issues in courts, and tailor their participation choices accordingly. For instance, Olson (1990) notices that redistributive issues involving citizen groups constitute a disproportion number of cases seen by the Federal Court for the district of Minnesota, consistent with theories that politically disadvantaged groups (such as citizen groups) who are weak in the legislative and administrative arena resort to work in the judicial arena more often than their politically powerful peers.[50]

3.2.4.2 Suing for Indirect Influence

Because litigation is expensive (both monetarily and politically), complex and time consuming, interest groups that can credibly commit to suing agencies may also use the

[48] Boehmke, Gailmard and Patty (2006) find a related result that interest groups' lobbying of legislators and bureaucrats is highly correlated. See also DeFigueiredo and Edwards (2004).
[49] For a discussion of the role of new entrants in opening the market for long distance telecommunications see, Spiller (1996b). For a environmentalist interest groups in limiting the development of nuclear power, see, Weingast (1981).
[50] See Epstein (1985) and Olson (1990) for a summary of works on the political disadvantage theory of interest group participation in the judical arena.

threat of litigation to obtain policies advocated through their buying and lobbying processes. Via the threat of litigations, interest groups use litigations as a complement to buying and lobbying. Dal Bó et al. (2006) highlight the use of judicial threats to discipline public officials, and show how concurrent uses of threat and buying magnify their policy effectiveness. The degree to which litigation threats can alter bureaucratic behavior, though, depends on the probability that the interest group is likely to win. Thus, the composition of the legislature and that of the courts, impacts the credibility of litigation threats. De Figueiredo (2005) finds, for example, that interest groups are most likely to challenge a Federal Communications Commission when the courts are more likely to rule against the administration.

3.3 Strategic Choice of Instruments

Given the multiplicity of instruments of influence available to interest groups, we now analyze how interest groups may strategically select their choice. Before a policy is implemented, interest groups face the choice of buying and/or lobbying, and if lobbying, to whom to lobby. Buying and lobbying are not equally efficient and effective for all groups. Indeed, Hillman and Hitt (1999) propose that the current stage of an issue's life cycle, the firm's monetary and informational resources, and the corporate environment that the firm operates in codetermines the firm's political strategies. For example, Ansolabehere, Snyder and Tripathi (2002) find that unions and single-issue groups, whose objectives are more clear and partisan than other interest groups, tend to contribute rather than lobby. Such patterns are consistent with theories of strategic interest group behavior. More specifically, groups with large memberships can gain attention by their sheer number, and hence do not need to spend large amount of money buying legislators; groups with extreme ideological preferences may not reflect a large spectrum of legislative constituencies' preferences, and may be better off engaging in direct or indirect buying (Ansolabehere, Snyder, and Tripathi 2002). Boehmke, Gialmard and Patty (2005) take a step back and argue that in fact, such strategic choices among lobbying venues are desired and designed by the Congress. In particular, the ideological and jurisdictional differences between the legislature and the bureaucracy drive interest group seld-selection into lobbying activities, thereby revealing the legislators the nature of the issue at hand. ,

Once a policy has been implemented, litigation may be the only strategy left to the losing interest group.[51] The optimality of litigation will depend on the relative ideological position of courts, policymakers and the interest group. Indeed, DeFigueiredo and DeFigueiredo (2002) show that lobbying falls with the probability that the court will reverse the agency. De Figueiredo (2002) also finds that interest groups take the FCC more to courts when courts are ideologically far from the administration.

[51] Interest groups may intensify their lobby and buying activities with the purpose of reversing the policy by direct legislative override. For this strategy to be "optimal", though, the policy implementation must have reflected the erroneous strategic choice by the interest group.

3.3.1 A Model and Empirical Implications[52]

To highlight the strategic use of instruments, we present here a simplification of a model of indirect lobbying by Iaryczower, Spiller, and Tommasi (2006).[53] There are three players, an Interest Group and a Court with known preferences, and a Legislature composed of legislators whose preferences, distributed on a continuum, depend on the state of the world, such as public support for particular policies. The game starts with nature determining the state of the world, and follows with the Interest Group determining whether and how much to lobby, the Court making a decision on a particular outcome, and the Legislature reviewing the Court's decision, and possibly reversing it by imposing an alternative policy. Following the standard *Separation of Powers* approach, the Court will decide the case such that, given its information, the decision maximizes its utility subject to the legislature not reversing it.[54] It is assumed that the Interest Group has an informational advantage over the legislators on the state of the world. Using its informational advantage, the Interest Group chooses how much to lobby legislators in an attempt to change their stance on the issue, thus indirectly changing the set of Court rulings that cannot be overturned by the Legislature. Since the Court's optimal decision is in that set, lobbying affects judicial decisions. Thus, indirect lobbying.

3.3.1.1 The Model

There are two individual players, the court and the interest group,[55] and a legislature populated by a continuum of legislators with total size one. The policy space is $X = [0,1]$, and given ideal policy z_i, player i has preferences over policies $x \in X$ represented by a utility function $u_i(x, z_i) = -\frac{1}{2}(x - z_i)^2$. Without loss of generality, we assume that the interest group's ideal policy is at the right extreme of the policy space, $z_u = 1$, and refer to policy x' as being pro-interest group with respect to x'' whenever $x' > x''$.

Legislators and the court differ in their responsiveness to voters. In particular, we assume that the court is completely unresponsive to the position of voters in the policy space, and denote its preferred policy by $z_c \in X$. We assume, though, that legislators are at least partially responsive to voters' stance on the issue. Assuming for simplicity that the distribution of voters in the policy space can be characterized by a single parameter $\theta \in X$, we let the ideal policy of legislator j be given by $z_{Lj}(\theta;\beta_j) \equiv \beta_j + \theta$, where for all j, $\beta_j > 0$ and $\beta_j < 1$. The degree of conflict in the legislature is captured by the distribution of points β_j among its members, which we describe by the cumulative distribution $G(.)$; i.e., for any point β, $G(\beta)$ denotes the proportion of legislators for which $\beta_j \leq \beta$.

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[52] Much of this section is taken liberally from Iaryczower, Spiller and Tommasi (2006).

[53] DeFigueiredo and DeFigueiredo (2002) develop a similar vote buying rather than indirect lobbying model. However, in their model there is no uncertainty, a fundamental issue to trigger informative lobbying.

[54] See, for example, Gely and Spiller (1990).

[55] This model can also be applied to a game between the administration and the legislature. Throughout this section, the word "court" can be replaced by the word "agency" to generate a model of indirect lobbying of the bureaucracy.

Given the extent of interest group activity, policy outcomes result from the interaction of the court and the legislature. While the precise form of this interaction depends on specific institutional details, in most polities the elective body can ultimately impose its will under some sufficiently demanding procedure. We represent this idea by assuming that the court chooses a ruling $x_c \in X$, which the legislature can reverse with the votes of a majority $m \in [1/2,1]$ of legislators. We say that a court's ruling is "stable" in the legislature – and therefore final – if there exists no alternative policy that a majority m of legislators would prefer to it in a binary choice, and denote the set of stable rulings given the majority rule m by S_m.

Legislators and the court are uninformed about the realization of θ, and have common prior beliefs represented by the cumulative distribution function $F(\cdot)$ with density $f(\cdot)$. In contrast, the interest group is perfectly informed about the realization of θ, and can potentially credibly transmit this information through costly actions - lobbying (participating in legislative or regulatory hearings, writing white papers, and even organizing strikes and public demonstrations). In particular, given a realization θ', the interest group can organize an observable level a of actions bearing a cost $C(a,\theta')$. For simplicity we assume that $C(a,\theta)=a(k-\theta)$, $k>1$, that is, the marginal cost of lobbying is decreasing in the pro-interest group stance of the population.

The timing of the game can thus be described as follows: *(i)* θ is realized and privately observed by the interest group; *(ii)* the interest group decides a publicly observable level of lobbying intensity a; and *(iii)* the court chooses a ruling x_c in the set of stable policies in the legislature S_m.[56]

An equilibrium is a triplet $\Gamma=\{\gamma(\cdot),x_c(\cdot),F(\cdot|a)\}$ consisting of *(i)* a strategy for the interest group, $\gamma : X \to R_+$, mapping "types" θ to levels a of lobbying intensity a, *(ii)* a strategy for the court, $x_c : R_+ \to S_m$, mapping observations of lobbying levels a to stable rulings $x_c \in S_m$, *and (iii)* beliefs $F(\,|a)$ by the court and the legislators such that:

(a) $\gamma(\theta) \in \arg\max_{a \in R_+} u_u(x_c(a)) - C(a,\theta) \quad \forall \theta \in X;$

(b) $x_c(a) \in \arg\max_{x \in X} \{u_c(x) : x \in S(m \mid a)\} \quad \forall a \in R_+,$ and

(c) whenever $a \in \gamma(X)$, $F(\cdot|a)$ is determined from $F(\cdot)$ and $\gamma(\cdot)$ using Bayes' rule.

3.3.1.2 The Symmetric Information Benchmark

We first characterize, as a benchmark, the symmetric information equilibrium. Note that in this case legislators are perfectly informed about the value of θ, and the interest group derives no benefit from lobbying, irrespective of the preferences of the electorate. Hence,

[56] For completeness, there is a fourth stage in which the legislature reviews the court's decision, but given that courts would only make policy choices that are stable, we can without any loss, discard this last stage.

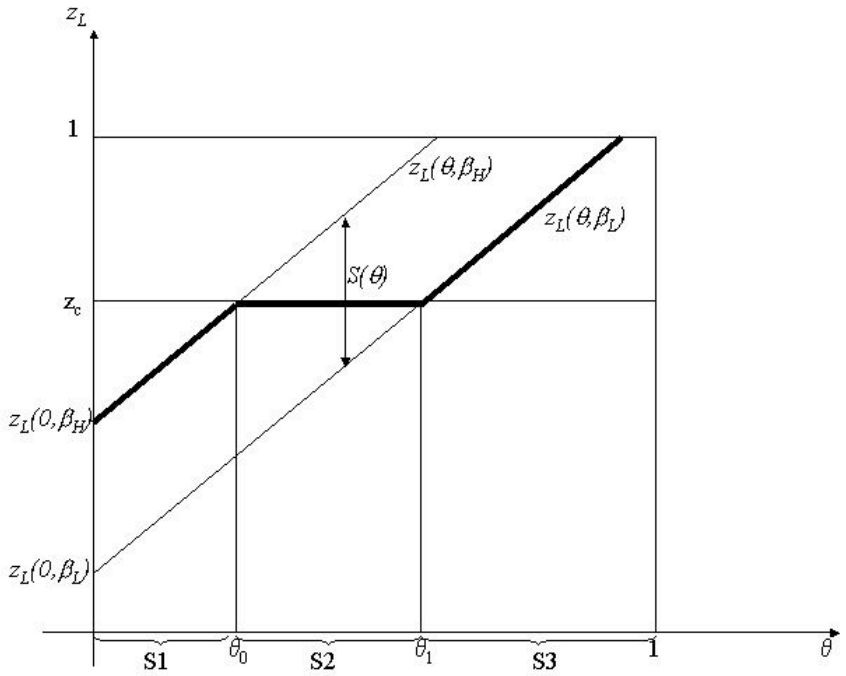
there will be no lobbying in equilibrium. The relationship between preferences of the electorate and policy outcomes in the symmetric information environment, however, is the key element determining the amount and effectiveness of lobbying in the incomplete information environment.

We start by characterizing the set of stable policies in the legislature given majority rule m. Letting $\beta_L^m \equiv G^{-1}(1-m)$ and $\beta_H^m \equiv G^{-1}(m)$, it is easy to see that $S_m(\theta)=[z_L(\theta; \beta_L^m), z_L(\theta; \beta_H^m)]$. That is, β_L^m is the critical legislator for a pro-interest group coalition, in the sense that any policy x to the left of her preferred policy would be replaced by a more pro-interest group policy. Similarly, β_H^m is the critical legislator for an anti-interest group coalition, in that any policy to the right of her preferred policy will be replaced by a more anti-interest group policy. Note that $\beta_L(m) \leq \beta_H(m)$, and $\beta_L(m) = \beta_H(m)$ only with simple majority rule ($m=1/2$), in which case $S_m(\theta)$ collapses to the preferred policy of the median voter in the legislature, and the court has no policy making power. It follows that for $m > 1/2$, the set of possible court's ideal policies that would be stable given θ has positive measure.

The court will then select its ideal policy unless it is constrained either for being "extremely" pro-interest group or anti-interest group in relation to the relevant players in the legislature. In particular, since the preferred policy of every legislator is strictly increasing in θ, a higher value of θ results in a pro-interest group shift of the entire set of stable policies. A court with a fixed policy preference z_c may then become a "pro-interest group" court for a legislature observing a low realization θ' ($z_c > z_L(\theta';\beta_H)$), or an "anti-interest group" court for a legislature observing a high realization θ''($z_c < z_L(\theta'';\beta_L)$). Figure 10 depicts in bold the resulting court's equilibrium rulings as a function of the state of nature, θ.

The two parallel lines in the figure represent the preferences of the critical legislators as a function of the state of nature, $z_L(\theta ; \beta_L)=\beta_L+\theta$ and $z_L(\theta ; \beta_H)= \beta_H+\theta$. For each θ, the set of stable policies $S(\theta)$ is the segment between these lines, the interval $[\beta_L+\theta, \beta_H+\theta]$ in the vertical axis. If, for some θ, the court's ideal point z_c is in $S(\theta)$, the court will be able to rule according to its preferred policy, facing no effective legislative constraints. In the example depicted in the figure, this occurs for all states between the (interior) points θ_0 and θ_1. In this region, then, the flat portion of the bold line represents the court's equilibrium ruling. For $\theta < \theta_0$, however, $S(\theta)$ is entirely below z_c. Thus, if it were common knowledge among legislators that public sentiment is strongly anti-interest group, the ideal point of the court would not survive the challenge of a more anti-interest group legislation. The best choice for the court in such states is, therefore, to enact the most pro-interest group *stable* ruling; i.e., $\beta_H+\theta$. For $\theta<\theta_0$, then, the bold line representing the court's equilibrium rulings coincides with $\beta_H+\theta$. Similarly, for $\theta>\theta_1$, $S(\theta)$ is entirely above z_c. In this subset of states the legislature is too pro-interest group compared to the court, and thus the best choice for the court in such states is to enact the most "anti-interest group" stable ruling; i.e., $\beta_L+\theta$. Proposition 1 below summarizes the preceding discussion.

Figure 10. Court's Best Response to Information



The legislature thus effectively constrains the court for some realizations of public opinion when the set $K = \{\theta : \theta \leq \theta_0 \vee \theta \geq \theta_1\}$ is non-empty. In other words, the court will be able to rule its preferred policy completely unaffected by public opinion only if this policy is both *(i)* pro-interest group relative to the preferences of the critical legislator for a pro-interest group coalition before a pro-interest group electorate ($z_c > z_L(1;\beta_L) = \beta_L + 1$) and *(ii)* anti-interest group relative to the preferences of the critical legislator for an anti-interest group coalition before an anti-interest group electorate ($z_c < z_L(0;\beta_H) = \beta_H$). Note that, as in Gely and Spiller (1990), this condition is more likely to be satisfied when there is significant dissent in the legislature (the critical legislators for a pro and anti-interest group coalitions are far apart, $\beta_L << \beta_H$).[57]

Moreover, in general, the size of K increases with β_L and decreases with β_H. Thus, the set of realizations of public opinion for which the court is effectively constrained is always smaller the higher dissent in the legislature is. Hence, the overall effect of legislators' responsiveness to public opinion on judicial independence depends on the relative position of the court in the policy space.

[57] See Proposition 1 in Iaryczower, Spiller and Tommasi (2006).

3.3.1.3 Informative Indirect Lobbying

The previous analysis showed that when the court is constrained for some (publicly known) preferences of the electorate, an increase in θ induces a more pro-interest group ruling, and thus, a more pro-interest group policy outcome in equilibrium. Iaryczower, Spiller and Tommasi (2006) show that when policy-makers are uncertain about the realization of θ, lobbying by the interest group restores the complete information mapping between the preferences of the electorate and policy outcomes. In particular, they show that equilibrium lobbying increases with the realization of θ when, given θ, the court is constrained by the legislature (i.e., $\theta \in K$), and does not change when the court is unconstrained ($\theta \in [\theta_0, \theta_1]$).[58]

That is, in equilibrium the level of lobbying will reflect the preferences of the electorate up to the extent that this information can influence a binding constraint for the court (and thus policy outcomes). In other words, lobbying is effectively fully informative. As long as (informed) policy is responsive to the electorate's preferences, interest group types facing different pro-interest group dispositions of the electorate will always choose different levels of lobbying, allowing the reproduction of the complete information link between policies and the preferences of the electorate.

This does not imply, however, that the equilibrium will necessarily involve transmission of information. In fact, lobbying will be completely unresponsive to the preferences of the electorate if (and only if) the court is unconstrained for every possible realization of θ. Conversely, there will be a complete separating equilibrium if (and only if) the court is constrained for every realization of public preferences. That is, only if the court's ideal policy is "extremely anti-interest group" (i.e., $z_c < \beta_L$), or "extremely pro-interest group" (i.e., $z_c > \beta_H + 1$), interest groups will choose different lobbying level for different observed values of θ. This result allows us to develop the response of the expected level of lobbying and pro-interest group rulings to changes in the composition of the legislature. Note that for our purposes changes in the composition of the legislature are relevant only to the extent that they affect the boundaries of the stable set of policies in the legislature, $z_L(\theta;\beta_L) = \beta_L + \theta$ and $z_L(\theta;\beta_H) = \beta_H + \theta$. Moreover, recall from the analysis of the symmetric information benchmark that the set of realizations of public opinion for which the court is effectively constrained decreases with the degree of dissent in the legislature. That is, in general, the size of K increases with β_L and decreases with β_H.

Since the level of interest group lobbying is decreasing in the size of the constrained court ruling space, it is straightforward to see that a pro-interest group shift in the preferred policy of the critical legislator for a pro-interest group coalition β_L (anti-interest group coalition, β_H) increases the expected pro-interest group tendency of the court' rulings level $E_\theta [x_c]$, and increases (reduces) the expected level of lobbying, $E_\theta [\gamma]$.[59]

[58] See Proposition 2 and Lemma 1 in Iaryczower, Spiller and Tommasi (2006).
[59] See Proposition 3 in Iaryczower, Spiller and Tommasi (2006).

This result has direct implications to the response of equilibrium outcomes to changes in court's preferences. First, the expected level of pro-interest group rulings will increase following a pro-interest group change in the court's preferences unless the court is constrained for every realization of θ both preceding and following this change. The change in the expected level of lobbying is, however, ambiguous.[60] Similarly, we know from the analysis of the symmetric information benchmark that the effect of legislators' responsiveness to public opinion on judicial decisions depends on the relative position of the court in the policy space. This implies that the relation between lobbying and the responsiveness of legislators to public opinion will also necessarily depend on the relative position of the court in the policy space.

3.3.2 Empirical Implications

This model has direct and empirically refutable implications for understanding interest groups' lobbying strategies, as well as implications concerning the relation between policy outcomes and interest group activity. First, policy outcomes in the form of judicial decisions become more "pro-interest group" the higher the level of the interest group's political activity. In other words, in this model, lobbying influences policies indirectly, via judicial adaptation. Second, the expected level of lobbying decreases the more effective the separation of powers between the court and the legislature is (i.e., the more divided the legislature is on the relevant issues). Specifically, the level of lobbying is decreasing in the magnitude of the set of stable policies in the legislature.[61]

This model also has strategic lobbying implications . Consider Figure 1. In the figure, for a given set of preferences z_c, β_H, β_L, we can partition the set of realizations of the state of the world, θ, in three areas. In regimes S1 and S3 (where the court is constrained either by a pro-interest group or anti-interest group legislature), informative lobbying takes place, while it does not in S2. Regimes S1 and S3, however, differ in the individuals over which lobbying effort is being exercised. While in S1,[62] the interest group lobbies a *friendly* legislator (i.e., that legislator with a higher pro-interest group tendency), in S2, the interest group is trying to mollify the preferences of the relatively *anti* interest group legislator. In other words, lobbying becomes counter-active. In relatively bad states of the world, lobbying is focused on *friendly* legislators, while in relatively good states of the world, lobbying is focused on *unfriendly* ones.

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[60] This should come as no surprise, however, since for this purpose, increasing x_c with β_L and β_H given is qualitatively similar as simultaneously reducing both β_L and β_H taking x_c as given, and from the prior discussion we know that β_L and β_H have opposite effects on the expected level of lobbying.

[61] This model also has standard separation of powers empirical implications. As in most separation of powers models, the equilibrium level of "pro-interest group" judicial decisions depends on the political composition of the legislature. In equilibrium, a more "pro-interest group" legislature will trigger more "pro-interest group" decisions provided that the court is effectively constrained by the legislature.

[62] Recall S1 reflects cases when the state of the world is relatively *anti* interest group, as θ is relatively low, given the preferences of the polity.

Finally, although in regime S2 lobbying becomes ineffective, suing is effective as legislators cannot agree in moving the administration policy in any direction. Thus, we should observe litigation the more divided the legislature is on the interest group's issue, and the stronger the division of powers in the polity, a result consistent with DeFigueiredo (2000) study of telecommunications litigation.

3.4 Interest Group Participation in Party Centered Systems[63]

The framework presented in the previous sections was based on an institutional environment resembling the separation of powers of the United States. In the United States, members of the Congress exhibit remarkable longevity; they also tend to specialize in committees and to play an active role in policymaking[64] and in overseeing the public bureaucracy.[65] Outside of the United States, however, legislatures often do not resemble the US Congress in terms of many or all of these above-mentioned features. This is particularly the case in the party-centered systems (Shugart and Haggard 2001) that dominate the world's democracies,[66] yet are also the least studied.[67] The US Congress is thus a rare outlier in the population of national legislatures, but the most commonly researched one. As a consequence, theoretical models of interest group participation in the US, while very helpful in generating general theory, are also limited due to their status as case studies of an atypical case. In this section we focus our analysis of interest group participation in party-centered systems[68]

Legislatures, and policy making in general, in these countries differ considerably from their US counterparts. In party centered systems, legislators may not stay for long in the legislature. As a consequence, they may have little incentives to invest in specialized legislative skills, or to control the bureaucracy. Similarly, in party-centered systems, the focus of policy making tends to be away from the legislature – with the cabinet (as in the case of unified governments) or the government party taking a more fundamental policy making role. In these instances, interest group participation in policy making drastically changes its nature. We explore these issues here.

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[63] This section draws from Jones, Saiegh, Spiller and Tommasi (2002).

[64] On the longevity of US congressional careers see Polsby (1968) and Ornstein, Mann and Malbin (1998). On committee specialization and the US Congress' policymaking role, see Shepsle (1978), Weingast and Moran (1983), Weingast and Marshall (1988), Krehbiel (1991) and Londregan and Snyder (1994).

[65] See Weingast and Moran (1983) and McCubbins, Noll and Weingast (1989). For a differing view on US Presidential powers see Moe and Howell (1999), while for a critical assessment of the "congressional dominance" theory see Moe (1987).

[66] By party centered we refer to those electoral systems that force the voters' choices among parties rather than across candidates. See Carey and Shugart (1995).

[67] To the extent that studies of legislatures in other presidential democracies have been conducted, they tend to focus almost exclusively on the least party-centered systems; especially Brazil.

[68] The establishment of the European Union presents a unique case of an evolving institutional structure, from party centered to one better characterized as separation of powers. For a discussion of how firms are adapting their political strategies to the emergence of powerful cross-national regulatory agencies, see Coen (1998).

In the previous sections we discussed how legislators benefited from interest group participation, and thus, how legislators have the incentive to mold the institutional framework in which they participate so as to extract as much information from it as possible. We explore this incentive in alternative institutional environments here.

The key question for comparative work is whether the assumptions that drive the US case are appropriate in understanding how electoral rules shape legislative incentives elsewhere. In principle, non-US politicians are as strategic in their actions as their US counterparts. However, the political institutions that shape legislators' incentives do vary across countries: career structure, electoral laws, and party rules can be very different. The question narrows, therefore, to the incentives these politicians face in different contexts.[69]

For example, if party nomination is inconsequential for electoral success, as is the case for incumbents in the Brazilian Chamber of Deputies (Ames 2001), party renomination will play no substantial role in shaping legislators' behavior. Thus, the US-centered analytical framework may suffice.[70] In contrast, there are situations, as in closed-list PR systems, where nomination at the top of a major party list can virtually guarantee electoral success. In this latter case, legislators' behavior will be constrained by the renomination rules but essentially unconstrained by the electoral process (Strøm 1997).

In federal countries with a closed-list PR electoral system, the process by which the provincial (district) party lists are formed largely affects which candidates run on each party list, what order they occupy, and, consequently, their chances of winning a seat in Congress. Hence, depending on the role that electoral rules give local party leaders in the creation of the district-party list, local party leaders may or may not be key in the determination of legislators' futures.

In many countries, where local and national party bosses dominate the construction of the local party list, legislators' ability to independently pursue a legislative career is substantially curtailed. Indeed, from legislators' perspectives, in order to pursue their desired career paths, they must maintain a good relationship with their local party bosses, not a good rapport with their constituencies. In some circumstances, such a good rapport may hinder their political progression. Party bosses have a complex political objective. They want to maximize the performance of their party in their province and or nation, but at the same time want to safeguard their position within the provincial or national party structure. The threat of challenge by popular legislators provides local and national party bosses with a strong incentive to reduce the national and provincial visibility of their underlings by rotating them among the various jobs the party can offer.[71] As a result,

[69] For a study of the impact of a country's institutional features on legislators' behavior, see Crisp et. al. (2004).
[70] On the interaction between legislators and the President in Brazil, see Alston and Mueller (2006). See, also, Samuels (2002) for an alternative explanation of the link between legislators and the executive in Brazil.
[71] On the role of party bosses in Argentina, see Spiller and Tommasi (2003).

voters in these PR-based systems tend to vote for the party list, not for the individuals on the list.

Within this institutional context, legislators have little incentive to work hard to improve their visibility in the eyes of the voters, and no incentive to develop legislative policy expertise. A legislator may, at best, be marginally aided in his/her career progression by obtaining public visibility. However, policy expertise is unrelated to visibility, nor is it relevant for the candidate nomination and general election process. The institutional barriers to reelection, therefore, generate widespread "shirking," providing sub-optimal levels of effort both from an "informational" (Krehbiel 1991) and "institutional" (Fearon 1999; Ferejohn 1999) perspective.

Electoral incentives not only impact a legislature's organization (Weingast and Marshall 1988), but also the design of bureaucratic decision making processes (Bambaci, Spiller and Tommasi 2002). In party centered systems where electoral incentives are centralized around parties, information will follow the same extent of centralization. Baron (2000), for example, shows how interest group participation is less transparent – but not less active- in Japan than in the United States. Although there are fewer access points, interest groups are able to provide information (lobby) in a systematic, albeit informal and centralized fashion. In party centered systems, administrative procedures as the US APA have little purpose because there is no need to inform legislators of the bureaucracy actions. On the one hand, legislators in party-centered systems are not that interested in pursuing bureaucratic supervision. On the other hand, in party centered systems with unified governments – such as those in Japan or the UK – the bureaucracy is under substantial control from the cabinet, with the cabinet having little incentive in providing the legislature with substantial powers to supervise its own actions. In sum, party centered systems differ in the incentives faced by legislators and bureaucrats. As a consequence, incentives for lobbying are similarly changed (Bennedsen and Feldmann 2002).

The incentives for campaign contributions also change accordingly. There is little incentive in widely distributing campaign contributions in party centered systems, as distributions to legislators may have little impact on their reelection, and their post-reelection behavior will be highly impacted by the incentives of the political party bosses. Thus, as with lobbying efforts, campaign contributions will be highly centralized in key party decision makers (Bennedsen and Feldmann 2002).

Finally, litigation in party centered systems may provide less satisfaction than in systems with stronger separation of powers. Because party centered systems tend to narrow the separation between legislative and executive powers, courts face a substantially narrower set of discretion. The courts are in a situation where overturning the bureaucracy may imply alienating the cabinet, which may, in turn, trigger retribution. Indeed, evidence from Japan and the UK suggest that progression within the judiciary is dependent on proper

behavior vis-à-vis the government of the day.[72] Similarly, Iaryczower, Spiller and Tommasi (2002) show that in Argentina, strongly unified governments tend to control the judiciary.[73]

3.5 Conclusion

In this survey we try to provide a framework to understand interest group participation in public policy decision-making. We show that polities where legislators have an important policy making role will tend to develop more transparent and direct interest group activity. Conversely, polities where policy making is centralized in the cabinet or the government party, though, will tend to reserve interest group access to key decision making politicians. The trade-off between campaign contributions, lobbying and litigation is also affected by the nature of the institutional environment. As a result of the concentration of power in the cabinet, litigation loses its power in unified systems, limiting successful interest group activities to direct lobbying and buying. In decentralized polities, the full extent of complementarities between direct and indirect lobbying, buying and suing become apparent.

These results suggest that interest group regulatory reform must take the institutional environment into account in order to be successful in delivering the expected effects of increased transparency and improved public policy. It is one thing to implement reforms compatible with the institutional environment, than to force inconsistent reforms. A good example is Argentina, which in the middle of its privatization reform in the mid-1990s formally introduced interest group participation in regulatory proceedings, in an environment in which legislators mostly play the role of a blunt veto player rather than an active policy making role.[74] Since then, the response of the executive to attempts by interest groups (mostly consumer and citizen activist groups) to thwart its public utility tariff policies has been the issuing of decrees, thereby sidestepping the formal regulatory process where such interest groups have an advantage, centralizing public policy-making, and pushing interest groups to act in the legislative and judicial arena, where the executive has the advantage.[75] Thus, although the reform may have been well intended, its effectiveness has remained limited, thwarted by the intrinsic nature of Argentina's polity.

The late George Stigler admonished survey writers against making grandiose statements about productive future research topics, claiming that

> *"Promising ideas are all that even a rich scholar possesses, ... Rather than pursue the economics of scholarly advice, let me simply say that I have always thought that revealed preference is the only reliable guide to what a scholar believes to be*

[72] See Ramseyer and Rasmusen (1997) for evidence on Japan and Salzberg and Fenn (1999) for evidence on the UK.
[73] For a discussion of judicial adaptation to political control, see Spiller (1996a).
[74] See, Jones et.al. (2002).
[75] Spiller and Tommasi (2006).

fruitful research problems: If he doesn't work on them, he provides no reason for us to do so."[76]

We will break apart from Stigler's admonition just a bit, and make the point that this survey has shown that we know quite a bit about how interest groups interact in open societies, such as the United States, and to some extent in Europe, but that there is very little systematic knowledge about their strategic choices in emerging and developing economies. Revealed preference shows our belief that much can be learn from expanding in less chartered territories. Explore at your peril.

[76] Stigler (1981, p76).

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